

Star Plus Navigator21 Manual

Table Of Contents

Welcome	1
Orion Star Plus™ Series	1
Navigator Overview	3
Navigator Main Screen	3
The Toolbar	4
Meter Overview	4
Meter Types.....	4
Meter Connection	5
Getting Started	5
The Active Method	5
Method Development	5
Calibration.....	6
Taking A Measurement	6
Taking Continuous Measurement	6
Collecting Sample Data from Meter	6
Collecting Stored Data from Meter	6
Saving Results	7
Data Research and Reporting	7
Sample Measurement	9
Collecting Sample Data from Meter	9
Collecting Stored Data from Meter	9
Taking Measurements	10
1. Set the Active Method	11

2. Select the Measurement Types to Acquire	12
Enter Sample ID Information.....	13
Take a Measurement.....	14
View Results	15
Save Results.....	15
Viewing Results.....	15
Dissolved Oxygen Units	16
Saving Sample Results.....	16
Taking Continuous Measurements.....	17
1. Set the Active Method	18
2. Select the Measurement Types to Acquire	19
3. Enter Sample ID Information	21
4. Take Continuous Measurement	22
Method Development.....	29
The Active Method.....	29
Method Development	29
pH.....	29
ISE.....	30
Conductivity	31
Dissolved Oxygen	33
OPTIONS.....	34
Saving the Method.....	35
Viewing/Editing a Different Method	35
Importing and Exporting Methods	35

Table Of Contents

Importing and Exporting Methods	35
Exporting a Method	36
Importing a Method	36
Calibration	37
Viewing Calibrations	37
Calibration	38
pH Calibration	40
Auto-Buffer Recognition	41
Manual Calibration	41
ISE Calibration	45
Manual Calibration	46
ORP Calibration	49
Auto-Standard Recognition	50
Manual Calibration	50
Conductivity Calibration	52
Auto-Standard Recognition	53
Manual Calibration	53
Dissolved Oxygen Calibration	57
Auto-Standard Recognition	59
Manual Calibration	59
Temperature Calibration	61
Advanced	65
Research and Reporting	65
Administrator Setup	65

Star Plus Navigator21 Manual

NavAdmin.exe.....	65
Admin Options	66
Database Connection	67
Users.....	68
Meter Options	71
Save Changes	71
21-CFR Option.....	73
21-CFR Overview	73
21-CFR Administrator Setup.....	74
The Administrator's role - Window's Setup	74
The Administrator's role - Navigator Setup	74
21-CFR Users	76
21-CFR User Validation	76
Signing Electronic Records	76
21-CFR Verification and History	77
About ThermoFisher Scientific	78
How To Contact Us	78
Administrator Instructions	79
Administrator Instructions	79
Database Access Permission.....	79
Database Security	79
Index	81

Welcome

NavHelp 1.4

Orion Star Plus™ Series

Excellence in Electrochemistry

Environmental ♦ Food and Beverage ♦ Pharmaceutical ♦ Consumer Products ♦
General Laboratories



Introducing Star Plus Navigator

[How to Contact Us](#)

Navigator Overview

Navigator Main Screen

The main screen is configured to allow the analyst to easily take measurements and view results. Four toolbar buttons provide immediate access to the other main functions of the program - editing meter methods, calibrating and viewing calibration results, and accessing stored data for research and reporting.

Star Plus Navigator 21

Edit Method... View Calibration... Calibrate... Research...

Active Method : 1

File Tools Options Help

pH ISE ORP MV

Cond TDS SAL RES

DO MEASURE CONTINUOUS MEASUREMENT

COLLECT DATA COLLECT STORED DATA

Auto-Save Folder : Main

Sample Name
Sample-1

Comment

Author :

Folder :

SAVE

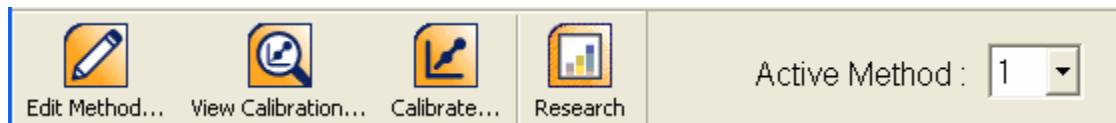
8/2/2008 2:34 PM

The Navigator main screen self-configures to a particular Meter type and capability. The example above depicts a Meter type that supports the full range of possible measurements - pH, ISE, ORP, Conductivity and Dissolved Oxygen.

The main screen is split horizontally into two views for

1. Setting up and taking measurements (top portion)
2. Viewing and saving measurement results (bottom portion)

The Toolbar



- Edit Method... - Click to Perform [Method Development](#)
- View Calibration... - Click to [View Meter Calibrations](#) for the Active Method
- Calibrate... - Click to [Calibrate](#) the Meter for the Active Method
- Research - Click to browse saved data for [Research and Reporting](#)
- Active Method - Drop Down to Change the [Active Method](#) on the Meter

Meter Overview

Meter Types

The Meters in the Orion Star Series support a wide variety of electrochemical measurement types. Some Meter models support only one measurement type (e.g. pH Meter), while other models may support some or all measurement types.

1. pH (acidity)
2. ISE (ion concentration)
3. ORP (oxidation-reduction potential)
4. mV (millivolts)
5. Cond (conductivity)
6. TDS (total dissolved solids)
7. SAL (salinity)
8. RES (resistivity)
9. DO (dissolved oxygen)

The measurement types are arranged in three groups :

1. pH, ISE, ORP, mV
2. Cond, TDS, SAL, RES
3. DO

Multi-meter models which support all types are capable of up to three simultaneous measurements. A measurement may be taken simultaneously with any another measurement from a different group.

The Navigator Software runs all Meter models in the Orion Star Series. When it first runs, the Meter model is detected and the software self-configures to support only the measurement types actually supported by the Meter.

Meter Connection

The Meter is connected to the PC via a standard RS-232 Serial cable. Serial communication parameters (such as baud rate) are factory installed and do not need to be changed, however they can be changed on the Meter and modified on the PC in [Administrator Setup](#).

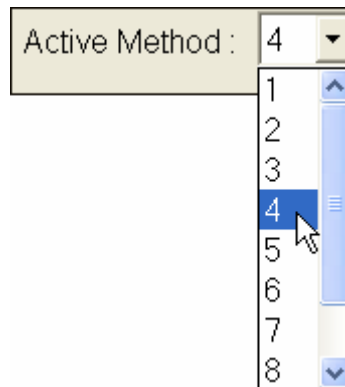
During the time the Navigator software is running and the Meter is connected to the PC, the Meter keypad is disabled. In order to access the Meter functions via keypad, the Navigator software must not be running, or the Meter must be disconnected from the PC. The Meter keypad should become active within 20 seconds after exiting the Navigator software or disconnecting the Meter from the PC.

Getting Started

The Active Method

Although the Meter supports ten unique methods, only one method may be active at a time. Once a method becomes the Active Method, it is used for all future measurements and calibrations until the Active Method is changed to a different one.

The Active Method is chosen simply by selecting its number, 1 through 10 on the Navigator toolbar:



Method Development

A Method is a list of setup parameters which will be used during calibration and when taking measurements in order to optimize and individualize the measurement process. The Method is broken up into sections based on the Meter measurement types that are supported. The Active Method on the Meter may be uploaded to the

PC, viewed, edited and saved back to the Meter. Click on the Edit Method toolbar button to access and change the currently active Method on the Meter:



For more information about the process of Method Development, [click here](#).

Calibration

Before measurements can be taken, the electrode must be calibrated. Calibration is the process of determining the Meter response at different concentration levels using known standards. Most measurement types require multiple standard measurements in order to produce a valid response curve across a wide range of concentrations. Others, such as ORP (Oxidation-Reduction Potential) and DO (Dissolved Oxygen) only require one standard. Click on the Calibrate... toolbar button to run calibration for any of the electrode types using the currently active Method on the Meter:



For more information about the process of Calibration, [click here](#).

Taking A Measurement

The primary function of the Meter is to take measurements of unknown solutions. Of course, for measurements to be accurate, a valid calibration must have been performed first. For a complete description on taking measurements, [click here](#).

Taking Continuous Measurement

Continuous measurement at predefined time interval can be done . For a complete description on taking continuous measurements, [click here](#).

Collecting Sample Data from Meter

Data can be collected from meter by pressing the measure key in Meter while it is connected to Star Navigator . For a complete description to collect data from Meter , [click here](#).

Collecting Stored Data from Meter

The stored Data in the meter can be collected from Navigator to store in the PC . For a complete description for collecting stored data from Meter , [click here](#).

Saving Results

Measurement results are saved in an Access Database. All relevant information is saved with each measurement, including the date and time, Method conditions that were used, the Calibration parameters, the raw Meter value as well as the final interpolated result. You can save the results automatically or choose to preview the results before saving them. For more information about saving results and administrator responsibilities, [click here](#).

Data Research and Reporting

A powerful data research and reporting application called LabSpeed Navigator may be run in order to perform the following functions.

- Data browsing and retrieval
- Data display in drill-down grid format
- Data display in interactive charts and plots
- Data reporting using standard report layouts
- Data printing and exporting

Click on the Research... toolbar button to run LabSpeed Navigator.



LabSpeed Navigator is a standalone application and contains its own complete Help document. For more information about how to use LabSpeed Navigator, refer to the Help Contents on LabSpeed's main menu bar.

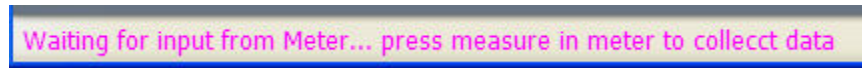
Sample Measurement

Collecting Sample Data from Meter

This option allows the user to send the data from the meter to Star Navigator by pressing the measure key in the meter . In normal condition once the Star Navigator established connection with meter all the meter buttons are inactive . However , if the user wants to send the data from meter manually then press the Collect Data button in Star Navigator .Now Star Navigator will wait for details from meter .



The task bar in the star navigator will prompt the user to press the Measure key in the meter to send the data as shown below.



Press the measure key once in the meter to send the data from meter to Star Navigator. This action can be cancelled if the user press the STOP button.

Collecting Stored Data from Meter

This option allows the user to collect the stored data from the meter . If the user wants to collect the stored data from meter then press the Collect Stored Data button in Star Navigator . Now Star Navigator will collect all the stored data from the instrument to the specified storage location .



COLLECT STORED DATA

The task bar in the star navigator will prompt the user as shown below.



Retrieving stored data from Meter... please wait

Once all the stored data are captured then the buttons in the star navigator becomes active. The amount of time to retrieve the data and store the data locally depends on the no of data stored in the meter.

Note : *The data retrieved from the meter are stored in location specified in the folder field . By default, the collected data from meter set to StoredData-1 and the trailing number is automatically incremented for the next data from meter . You may change the name to something more descriptive. Once the name is changed, it will automatically be auto-incremented .*

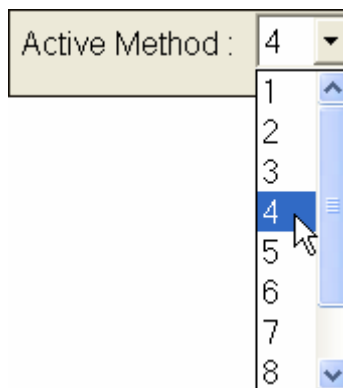
Taking Measurements

The main screen auto-configures to allow only those measurements that are supported by your Meter model. The example below shows what the main screen would look like for a Meter that supports all measurement types. If your Meter model does not support a particular measurement type, then it will be disabled.

The screenshot shows the 'Star Plus Navigator 21' software window. At the top, there is a toolbar with icons for 'Edit Method...', 'View Calibration...', 'Calibrate...', and 'Research...'. Below this is a menu bar with 'File', 'Tools', 'Options', and 'Help'. The main interface is divided into several sections. On the left, there are buttons for 'pH', 'ISE', 'ORP', 'MV', 'Cond', 'TDS', 'SAL', 'RES', and 'DO'. In the center, there are buttons for 'MEASURE', 'CONTINUOUS MEASUREMENT', 'COLLECT DATA', and 'COLLECT STORED DATA'. On the right, there are input fields for 'Sample Name' (containing 'Sample-1') and 'Comment'. Below these is a checkbox for 'Auto-Save' and a 'Folder' dropdown set to 'Main'. At the bottom right, there is a 'SAVE' button. The status bar at the bottom shows the date '8/2/2008' and time '2:34 PM'.

1. Set the Active Method

The Meter maintains ten methods, one of which is currently "active". To change the currently active method on the Meter, select the method number on the toolbar:

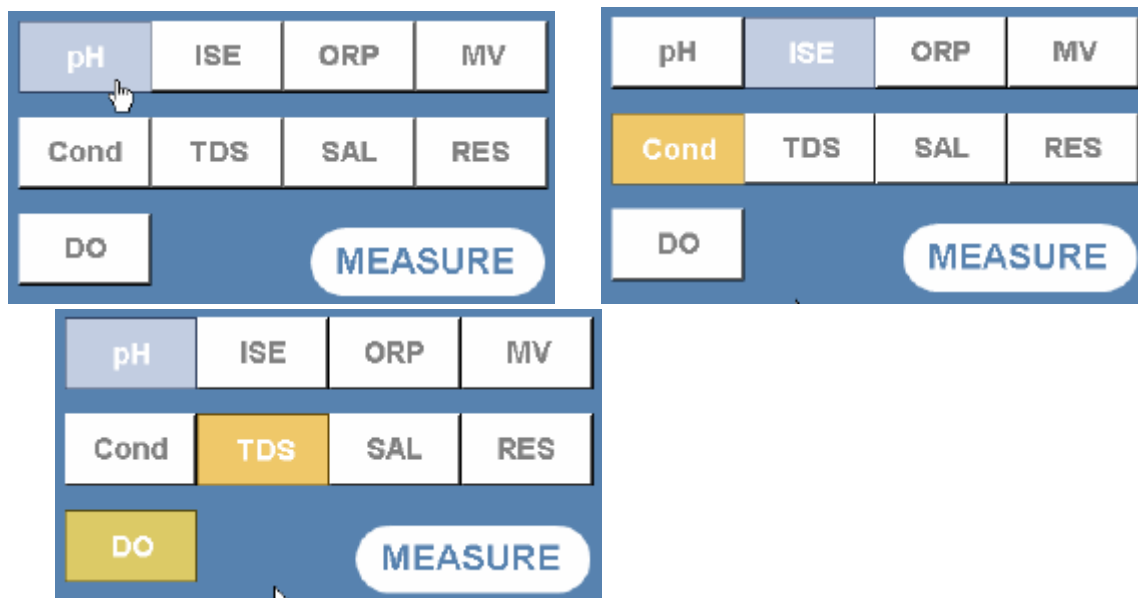




You can view or change the properties of this method by selecting the [button](#).

2. Select the Measurement Types to Acquire

Depending on the actual Meter model you have, you may choose up to three measurement types to be run simultaneously. The measurement types are arranged on three rows; one measurement type may be set for each row. Click with the mouse to toggle a measurement type on or off. For example, for a multi-function meter, you may choose to run pH on the first row, Conductivity on the second row and Dissolve Oxygen on the third row.



pH only ISE + Conductivity
pH + Total Dissolved Solids + Dissolved Oxygen

Measurement Types

pH	pH
ISE	Ion Concentration
ORP	Oxidation-Reduction Potential

MV	Millivolts
Cond	Conductivity
TDS	Total Dissolved Solids
SAL	Salinity
RES	Resistivity
DO	Dissolved Oxygen

Enter Sample ID Information

Sample information may be entered before taking the measurement to help identify that sample later on. You may enter a Sample Name, a Comment and a Folder name. You may also elect to automatically save the sample after the results are returned from the Meter.

Sample Name
Sample-1

Comment

☒ Auto-Save Folder : Main

Sample Name

By default, the sample name is set to Sample-1 and the trailing number is automatically incremented for the next sample. You may change the sample name to something more descriptive. Once the sample name is changed, it will automatically be auto-incremented until you change it to something else. You may start the auto-increment from any number. For instance, if you start with

"Batch-52", the next sample will be "Batch-53". A sample name can be up to 20 characters long.

Comment

Any useful description, note or comment may be added to the Comment field.

The Comment may be any size. The Comment is not remembered from sample to sample as it is considered unique. You can use copy/paste (Ctrl-C and Ctrl-V) to make it easier to re-enter the same comment for the next sample. Comments must be entered before the measurement begins.

Folder

The Folder is for organizing your data so that it will be easy to find later on. For instance, you could enter the Client's name here and later search for all samples performed for a particular client. The default is "Main".

Auto-Save

Check "Auto-Save" if you want to automatically save all results to the database once they are returned from the Meter. When "Auto-Save" is off, you may review the results and manually save them or choose not to save them. You will be warned if the next measurement is going to replace unsaved data, giving you a chance to save it if you forget.

Note: You may not be interested in saving the data at all (e.g. performing a series of measurements you do not wish to keep). In this case the constant warnings may become annoying. You may toggle OFF the save warnings by toggling the menu "Options | Warn to Save Measurements".

"Auto-Save" can be forced on by the Administrator. In this case you cannot turn the setting off. See [Administrator Setup](#)

Take a Measurement

Insert the Electrode into the solution and click Measure to initiate the measurement on the Meter.



"Reading" begins to flash on the status bar and in a few seconds, the Measure button changes to "Stop". At any time during the measurement, you may abort by clicking the Stop button.

All measurements performed from the PC Workstation are performed in "Auto-Read" mode. In this mode, the Meter automatically determines when the reading has stabilized and then returns the answer. The measurement can take a few seconds or several minutes depending on sample and electrode conditions that can cause drift or instability.

When the Meter detects a stable reading, the data is returned to the PC Workstation for display.

View Results

Results returned from the Meter are displayed at the bottom of the Main Screen. In the following example, pH, Conductivity and Dissolved Oxygen were measured and so results for all three are displayed. The results title bar contains the method number that was used and the sample acquisition date-stamp. The author (operator) and sample ID information is also displayed on the right.

method 1		8/11/2008 13:18:39	Author : SR	
pH	7.44 pH	25.0 C -28.9 mV	Sample-6	
Cond	3.89 mS/cm	25.0 C 25.0 C (ref) 0.672 /cm (K)		
DO	99.7 % sat	15.0 C (S) 65.0 C (M) 754.0 mmHg 804.0 nA		
			Folder : Main	SAVE

Besides the final measured result, each measurement type also displays additional helpful information. For example, the Conductivity measurement display consists of Conductivity (uS/cm), sample temperature, reference temperature and cell constant.

Save Results

If the sample has not been automatically saved, the SAVE button will be enabled. To manually save the results of this measurement to the database, click the SAVE button. For more information on saving sample results, [click here](#).

Viewing Results

Results returned from the Meter are displayed at the bottom of the Main Screen. In the following example, pH, Conductivity and Dissolved Oxygen were measured and so results for all three are displayed. The results title bar contains the method number that was used and the sample acquisition date-stamp. The author (operator) and sample ID information is also displayed on the right.

method 1		8/11/2008 13:18:39	
pH	7.44 pH	25.0 C	-28.9 mV
Cond	3.89 mS/cm	25.0 C	25.0 C (ref) 0.672 /cm (K)
DO	99.7 % sat	15.0 C (S) 65.0 C (M) 754.0 mmHg 804.0 nA	

Author : SR

Sample-6

Folder : Main

SAVE

Besides the final measured result, each measurement type also displays additional helpful information. For example,

1. the pH display consists of pH, sample temperature and Meter reading in millivolts.
2. the Conductivity display consists of Conductivity (uS/cm), sample temperature, reference temperature and cell constant.
3. the DO display consists of Dissolved Oxygen (% Sat), sample temperature, atmospheric pressure (mm Hg) and Meter reading in nA.

If the sample has not been saved, the SAVE button will be enabled. To manually save the results of this measurement to the database, click the SAVE button.

Dissolved Oxygen Units

The Meter always calculates and returns a DO result in both %Sat and mg/L units.

Either units may be displayed in the DO result by double-clicking on the units display. For example, double-click on the "%sat" units in the Result window and the results will be re-displayed in mg/L. Double-clicking again will re-display in %sat.

Once the display is changed it will continue to display in the chosen units until changed again.

Saving Sample Results

Measurement results are saved in an Access Database. The following information is saved with every sample :

1. Sample ID information -- sample name, operator, comment, folder.
2. Meter model and S/N
3. Acquisition date and time

4. Complete sample results, including calculated value, raw Meter value, measured temperature.
5. Method
6. Calibrations associated with each measurement type.

Samples may be saved automatically or manually. If you wish to save the samples you run automatically, check the Auto-save box.



When checked, the sample is saved immediately after the results are returned from the Meter.

If you wish to preview the sample results before saving them, turn Auto-Save off. You may then save the sample at any time by clicking on the SAVE button.



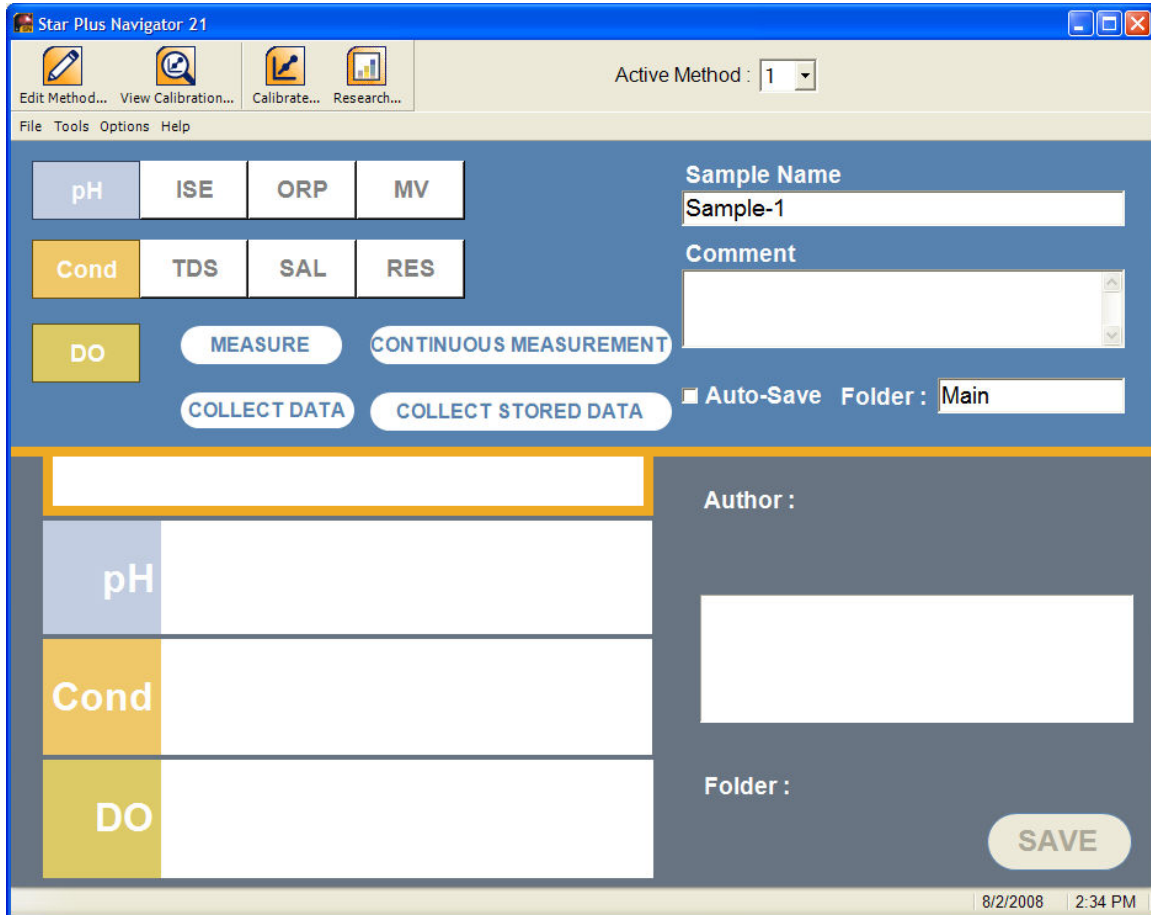
The Save button will be disabled if the sample has already been saved. If you forget to save the sample before running the next sample, a warning will be issued giving you chance to save the sample before it is replaced by the new one. The warning may be turned off in case you are running samples and do not wish to save them. To turn off the warning, un-check the menu item *Options / Warn to Save Measurements*.

The database name, location and security password are managed by the administrator using the administrator setup program - [NavAdmin.exe](#).

All sample browsing, printing and exporting of the saved samples is performed in the [Research and Reporting program](#).

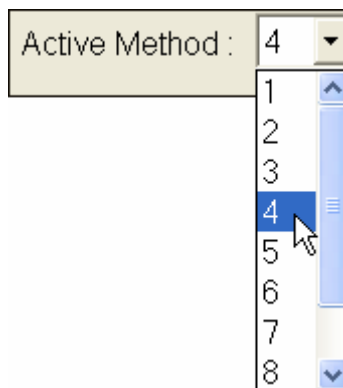
Taking Continuous Measurements

The main screen auto-configures to allow only those measurements that are supported by your Meter model. The example below shows what the main screen would look like for a Meter that supports all measurement types. If your Meter model does not support a particular measurement type, then it will be disabled.



1. Set the Active Method

The Meter maintains ten methods, one of which is currently "active". To change the currently active method on the Meter, select the method number on the toolbar:

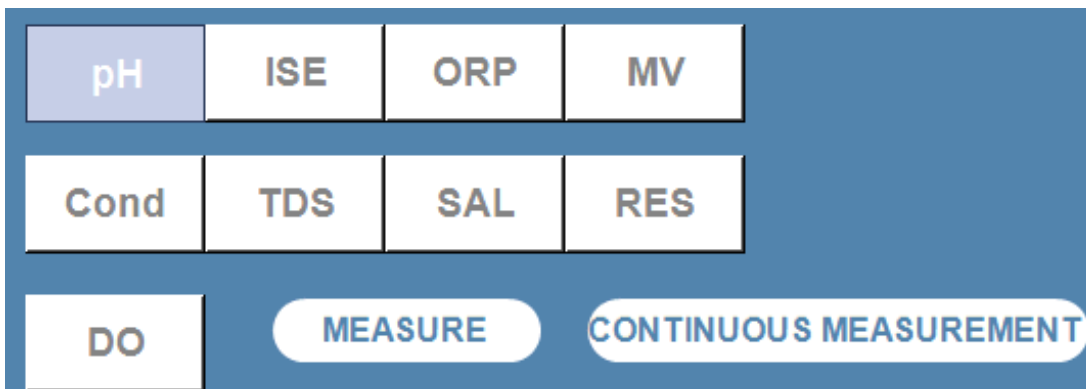




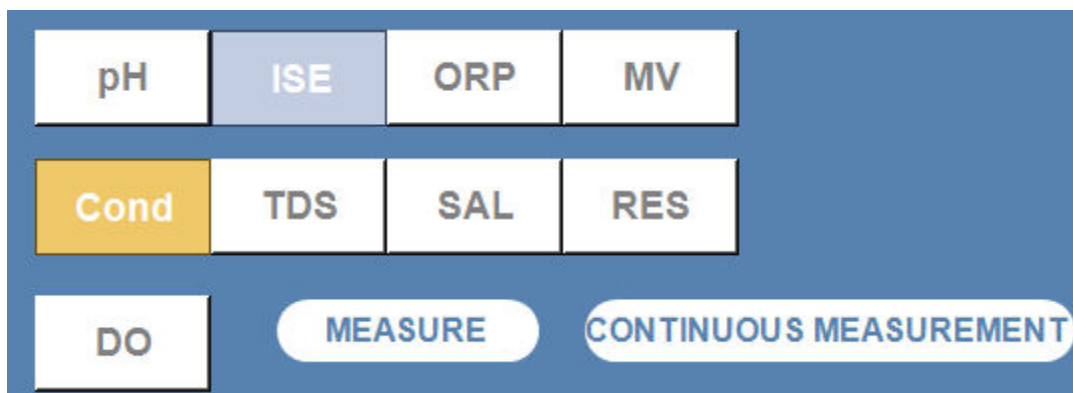
You can view or change the properties of this method by selecting the button.

2. Select the Measurement Types to Acquire

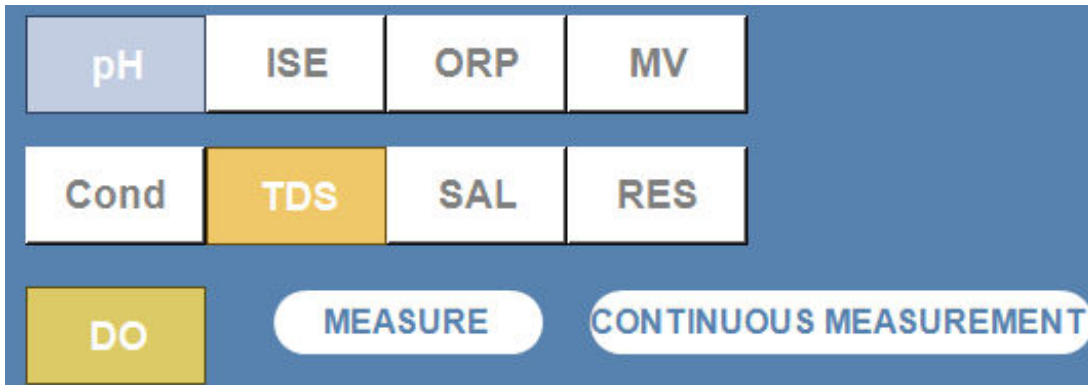
Depending on the actual Meter model you have, you may choose up to three measurement types to be run simultaneously. The measurement types are arranged on three rows; one measurement type may be set for each row. Click with the mouse to toggle a measurement type on or off. For example, for a multi-function meter, you may choose to run pH on the first row, Conductivity on the second row and Dissolve Oxygen on the third row.



pH only



ISE + Conductivity



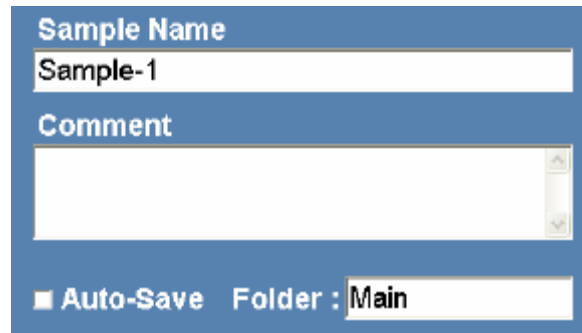
pH + Total Dissolved Solids + Dissolved Oxygen

Measurement Types

pH	pH
ISE	Ion Concentration
ORP	Oxidation-Reduction Potential
MV	Millivolts
Cond	Conductivity
TDS	Total Dissolved Solids
SAL	Salinity
RES	Resistivity
DO	Dissolved Oxygen

3. Enter Sample ID Information

Sample information may be entered before taking the measurement to help identify that sample later on. You may enter a Sample Name, a Comment and a Folder name. You may also elect to automatically save the sample after the results are returned from the Meter.

A screenshot of a software interface for entering sample information. It features a blue header bar with the text 'Sample Name' in white. Below this is a white text input field containing 'Sample-1'. Another blue header bar contains the text 'Comment' in white, followed by a large white text area. At the bottom, there is a blue bar containing a checkbox labeled 'Auto-Save' and a 'Folder :' label followed by a white text input field containing 'Main'.

Sample Name

By default, the sample name is set to Sample-1 and the trailing number is automatically incremented for the next sample. You may change the sample name to something more descriptive. Once the sample name is changed, it will automatically be auto-incremented until you change it to something else. You may start the auto-increment from any number. For instance, if you start with "Batch-52", the next sample will be "Batch-53". A sample name can be up to 20 characters long.

Comment

Any useful description, note or comment may be added to the Comment field.

The Comment may be any size. The Comment is not remembered from sample to sample as it is considered unique. You can use copy/paste (Ctrl-C and Ctrl-V) to make it easier to re-enter the same comment for the next sample. Comments must be entered before the continuous measurement begins.

Folder

The Folder is for organizing your data so that it will be easy to find later on. For instance, you could enter the Client's name here and later search for all samples performed for a particular client. The default is "Main".

Auto-Save

Check "Auto-Save" if you want to automatically save all results to the database once they are returned from the Meter. When "Auto-Save" is off, you may review the results and manually save them or choose not to save them.

Note: If you are planning to take reading for long time it is better to leave the meter in Auto save mode.

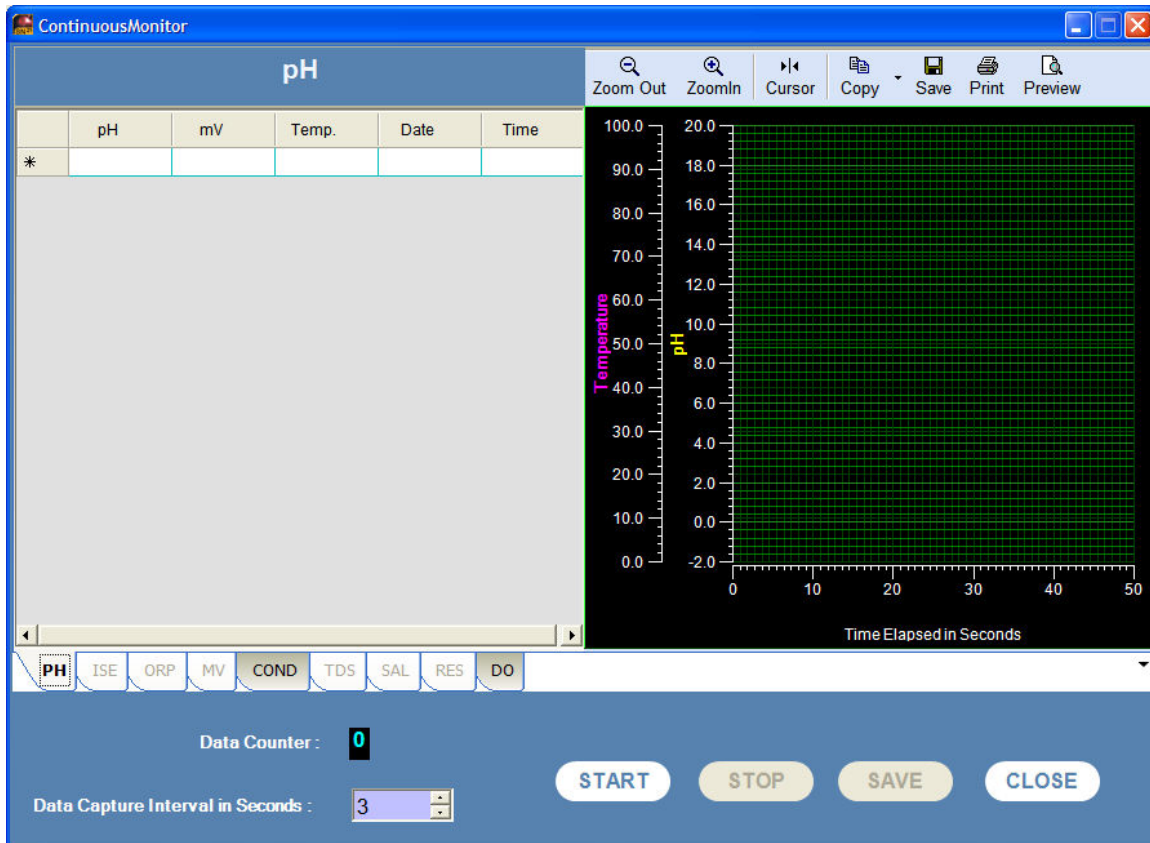
4. Take Continuous Measurement

Insert the Electrode into the solution and click Continuous Measurement to navigate to the continuous measurement mode.



CONTINUOUS MEASUREMENT

Continuous measurement screen appears as below.



Setting Data Capture Interval

By default the data capture interval is set to 3 Seconds and that is the minimum interval can be set . The interval can be increased by clicking the up button . Once the data capture started you cannot adjust the time in the middle of data acquisition . If need to change the interval , first stop the continuos measurement then you can change the interval.



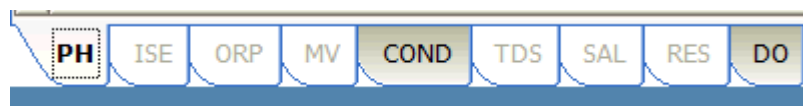
Data Counter

Data Counter : 0

Data counter displays the total no of samples are captured .

Graph

Graph option provides the trend of the sample being captured . The X axis , display the Start time and the time elapsed since the accusation begins . Y axis represent the Main parameter reading like pH,Conductivity , Do etc and temperature . Only the active mode data are displayed in the grid and graph. In multi mode option the different mode details can be viewed by selecting the active tab from the mode tab.



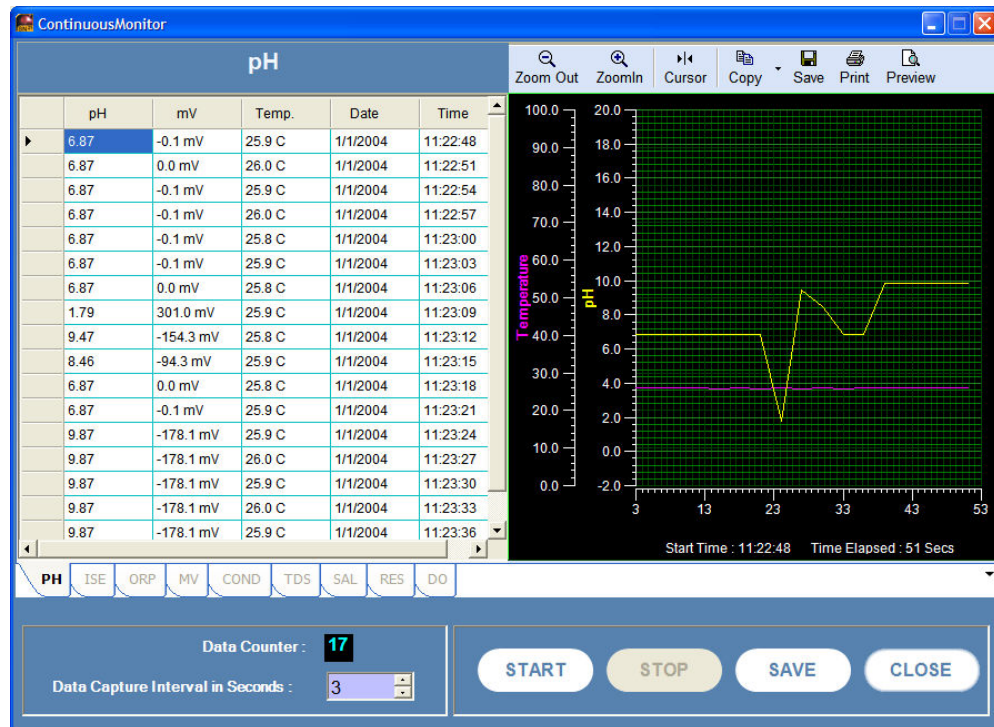
Starting Continuous Measurement

The continuous measurement starts by clicking the START button , the data are filled in the grid and the graph is plotted on the right .



Sample Measurement

In continuous measure mode the sample data are captured at the set interval and displayed in the grid and graph.



Stopping Continuous Measurement

Continuous measurement is stopped by pressing the button.



Saving Continuous measurement data

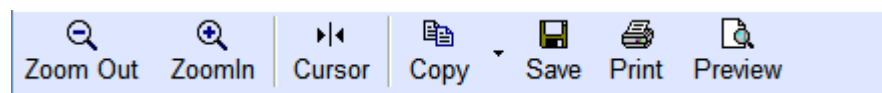
Continuous measured data can be saved by pressing the



button .

Graph Toolbar

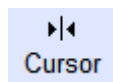
All the Graph toolbar buttons are not active in continuous measurement mode . Once the continuous measurement stops , then all the toolbar buttons are active.



Zoom Out Click to enlarge screen image



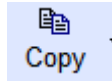
Zoom In Click to minimise screen image.



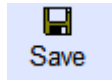
Show Cursor Shows a green guide line on the graph. You are able to drag the guide across the readings to get the exact or extrapolated

readings at any point on the curve.

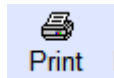
Sample Measurement



Copy to clipboard Copy the entire graph to the clipboard.
You can then paste it to other applications.



Save the viewing area of the graph .



print screen will pop up and the graph will become black and white in colour for a print preview of your readings.



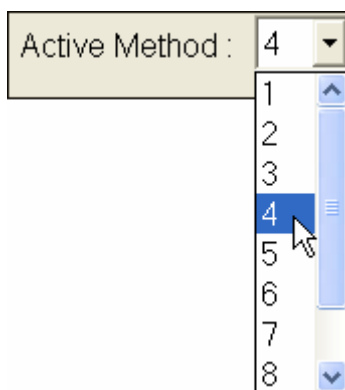
Click this button to close the continuous measurement .

Method Development

The Active Method

Although the Meter supports ten unique methods, only one method may be active at a time. Once a method becomes the Active Method, it is used for all future measurements and calibrations until the Active Method is changed to a different one.

The Active Method is chosen simply by selecting its number, 1 through 10 on the Navigator toolbar:



Method Development

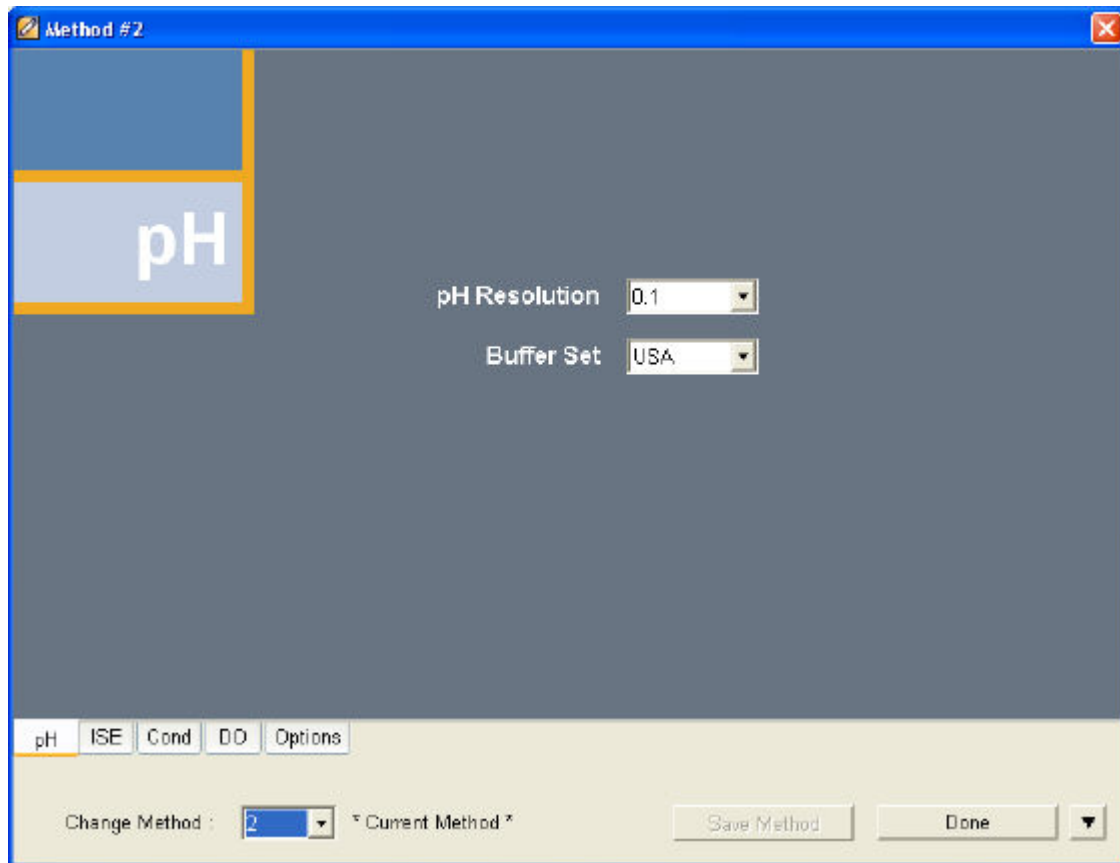
A Method is a list of setup parameters which will be used during calibration and when taking measurements in order to optimize and individualize the measurement process for a particular sample matrix.

To view and/or modify the settings in the [Active Method](#), click on the Edit Method toolbar button:



A Method is broken up into sections based on the Meter measurement types that are supported. Each section may be accessed by clicking on the appropriate TAB near the bottom left of the window. Depending on your Meter model, some TABs will not be available; the example below depicts a meter model that supports all measurement types. The first Tab is pH.

pH



pH Resolution: Determines the decimal precision of the pH result (0.1, 0.01, 0.001)

Buffer Set: Specifies the buffer set in use during calibration (USA or Euro)

1. USA/Orion buffers : 1.68, 4.01, 7.01, 10.01, 12.46
2. Euro : 1.68, 4.01, 6.86, 9.15

ISE

The screenshot shows a software window titled 'Method #2' with a blue border. On the left, there is a vertical sidebar with a blue header and a light blue box containing the text 'ISE'. The main area of the window is grey and contains four settings, each with a label and a dropdown menu:

- # Significant Digits: 3
- Units: ppb
- Conc Range: Low
- nLin: Auto

At the bottom of the window, there is a light beige bar. On the left, there are five tabs: 'pH', 'ISE' (which is highlighted with a dashed orange border), 'Cond', 'DD', and 'Options'. Below the tabs, there is a 'Change Method' dropdown set to '2' and a label '* Current Method *'. On the right side of the bar, there are two buttons: 'Save Method' and 'Done', followed by a small downward-pointing arrow icon.

Significant Digits: Determines the number of significant figures displayed in the ISE measurement mode (1, 2, 3).

Units: Units to be displayed in calibration and measurement mode (M, mg/L, %, ppb, none). Both measurement and calibration must be performed in the same units.

Conc Range: This selects the stability criteria to be used in the ISE calibration. For most calibrations the HIGH setting is the best option. But to maximize the accuracy of low concentration measurements using low concentration calibration standards the LOW setting can improve performance by giving the sensor longer to stabilize in the calibration standard.

nLin: Enables or disables calibration auto blank correction (Auto, Off)

Conductivity

The screenshot shows the 'Method #2' configuration window for Conductivity (Cond). The window has a blue title bar and a close button. On the left, there is a sidebar with a blue header and an orange 'Cond' button. The main area is grey and contains the following settings:

- Temp Comp:** Off (dropdown)
- Temp Coefficient:** 2.1 (text input), Valid Range: 0.0 - 10.0
- TDS Factor:** 0.49 (text input), Valid Range: 0.00 - 10.00
- Cell Constant:** 1.000 (text input), Valid Range: 0.001 - 199.9
- Ref Temp:** 25 (dropdown)
- Cell Type:** Standard (dropdown)

At the bottom, there is a tab bar with 'pH', 'ISE', 'Cond' (selected), 'DO', and 'Options'. Below the tabs, there is a 'Change Method' dropdown set to '2' and a 'Current Method' label. On the right, there are 'Save Method' and 'Done' buttons.

Temp Comp: This allows you to select between turning temperature compensation OFF, selecting a linear temperature compensation, or a non-linear temperature compensation for natural and ultra-pure water. (Off, Lin, nLF)

Temp Coefficient: If Lin Temp Comp is selected (linear temperature compensation), this is the manually entered linear coefficient in %/°C units. The default is 2.1%/°C, which is representative of many aqueous samples, to compensate for temperature changes.

TDS Factor: Total Dissolved Solids Conductivity conversion factor. The default value for TDS factor on the meter is 0.49, which is a reasonable estimate of a TDS factor for natural water applications.

Cell Constant: Conductivity Auto-calibration default cell constant. This is an estimate of the cell constant within a factor of 10 in order to allow the Meter to auto-recognize the conductivity standard during calibration. The default cell constant is 0.475. The instrument Auto-recognizes three Orion conductivity standards (1413 µS/cm, 100 µS/cm, and 12.9 mS/cm).

Ref Temp: The Reference Temperature. The temperature compensated conductivity of a solution is the conductivity which that solution exhibits at the reference temperature. The temperature is chosen to be either 25 °C, 20 °C, 15 °C, 10 °C or 5 °C.

Cell Type: Select the Cell Type (Standard, USP , Manual Range 1-7). In a Standard cell, the plates are parallel to each other. A Manual range may also be selected.

Dissolved Oxygen

Method #2

DO

Resolution Sat: 1

Resolution Concentration: 0.01

Barometer Type: Manual

Barometric Pressure: 760.0 Valid Range: 450.0 - 850.0

Salinity Type: Manual

Salinity Factor: 0 Valid Range: 0 - 45

Calibration Type: Zero (no unit)

pH ISE Cond **DO** Options

Change Method : 2 * Current Method *

Save Method Done

Resolution Sat: The decimal precision of measurement results when in units of % saturation (1, 0.1)

Resolution Concentration: The decimal precision of measurement results when in units of mg/L (0.1, 0.01)

Barometer Type: Barometric pressure compensation selection (Manual, Auto). Auto, which uses the instrument's internal barometer for pressure compensation is recommended. Use Manual in the unusual case when the probe may be exposed to higher pressures than the Meter.

Barometer Pressure: If Barometer Type is "Manual", this is the manual barometric pressure setting, entered in mm Hg.

Salinity Type: Selects method of Salinity correction (Auto, Manual). A conductivity probe must be used in addition to the DO probe for automatic

salinity correction and therefore is available only on Meters that also support Conductivity measurements. In this case, the conductivity reading is used to calculate the salinity correction factor and automatically applies that to the DO measurement. The manual setting allows the user to enter a manual salinity correction factor.

Salinity Factor: If Salinity Type is "Manual", this is the manual Salinity correction factor.

Calibration Type: Select Calibration type that will be used during DO calibration (water/sat/air (%sat), air/sat/water (%sat), winkler (mg/L), Zero (no unit))

OPTIONS

Method #2

Options

Calibration Overdue Warnings

pH	0	hours
ISE	0	hours
Orp	0	hours
Cond	0	hours
DO	0	hours

Manual Temperature (oC) 25.0

Stirrer Speed 3

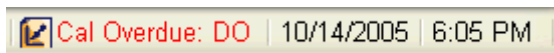
pH ISE Cond DO Options

Change Method : 2 * Current Method *

Save Method Done

Calibration Overdue Warnings: Each measurement type may be setup to warn you when a calibration needs to be performed. In each entry box, enter the number of hours after a calibration to warn you that another calibration is needed. A number between 0 - 9999 hours may be entered. 0 (zero) disables the warning.

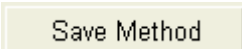
When a calibration is overdue, a warning is displayed in red in the status bar at the lower right adjacent to the current date/time. In the example below, a warning is displayed that DO calibration is overdue.



Manual Temperature: This is the temperature that will be used for temperature compensation when no temperature sensors are attached to the instrument.

Stirrer Speed: This item is only present on the Benchtop meters. It is used to set the stirrer speed. The speeds are 1 through 7 with speed 1 being the slowest and speed 7 being the fastest, and Off. A speed of 3 or 4 is recommended for most applications. The stirrer will automatically be turned on and off at appropriate times during calibration and when taking measurements.

Saving the Method

Click  in order to download the changes to the Meter. If you exit before saving the method, you will receive a warning and be given a chance to keep your changes.

Viewing/Editing a Different Method

When the Method Editor is first invoked, it is assigned values from the [Active Method](#) by default. While in the editor, you may view/edit any method on the Meter. Upon exiting the Editor the Active Method on the Meter is restored.

To change the method you are viewing and editing, select the method number on the drop-down list at the bottom of the editor window:



The label "Current Method" will be displayed if the currently selected method for editing is also the currently Active Method on the Meter. When a new method is selected, it will be uploaded from the Meter and the values displayed.

Importing and Exporting Methods




See : [Importing and Exporting Methods](#)

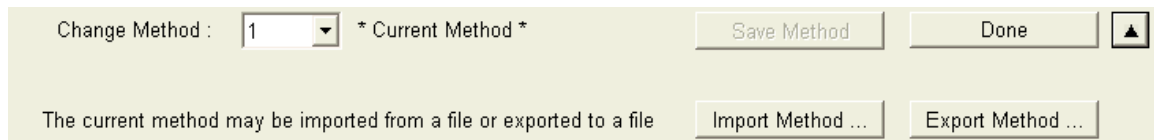
Importing and Exporting Methods

The Meter can maintain up to ten unique methods. Methods may also be exported (saved as a file) to the PC hard drive. A Method that has been exported as a file may be imported and downloaded to the Meter, replacing any one of the ten Methods stored there.

To gain access to the import / export functions, click the Edit Method... button to view the currently Active Method



Click the  button at the lower right corner of the Method Editor window. The bottom of the Method Editor Window expands to reveal two new buttons - "Import Method..." and "Export Method..." and the  button changes to .



Exporting a Method

1. If the Active Method is not the method you wish to export, change it now by selecting a different Method number.
2. Click the Export Method... button. You will be asked to enter a name. Enter a name and click Save. Methods are saved in XML format.

Importing a Method

1. If the Meter Method number you wish to overwrite is not selected, change it now by selecting the correct Method number.
2. Click the Import Method... button. You will be asked to select from a list of exported methods. Choose one and click Open. The Method values displayed in the Editor will be updated with the new values.
3. Finally, click Save Method on the Method Editor screen to download it to the Meter and overwrite the method at the currently selected Method number.

Calibration

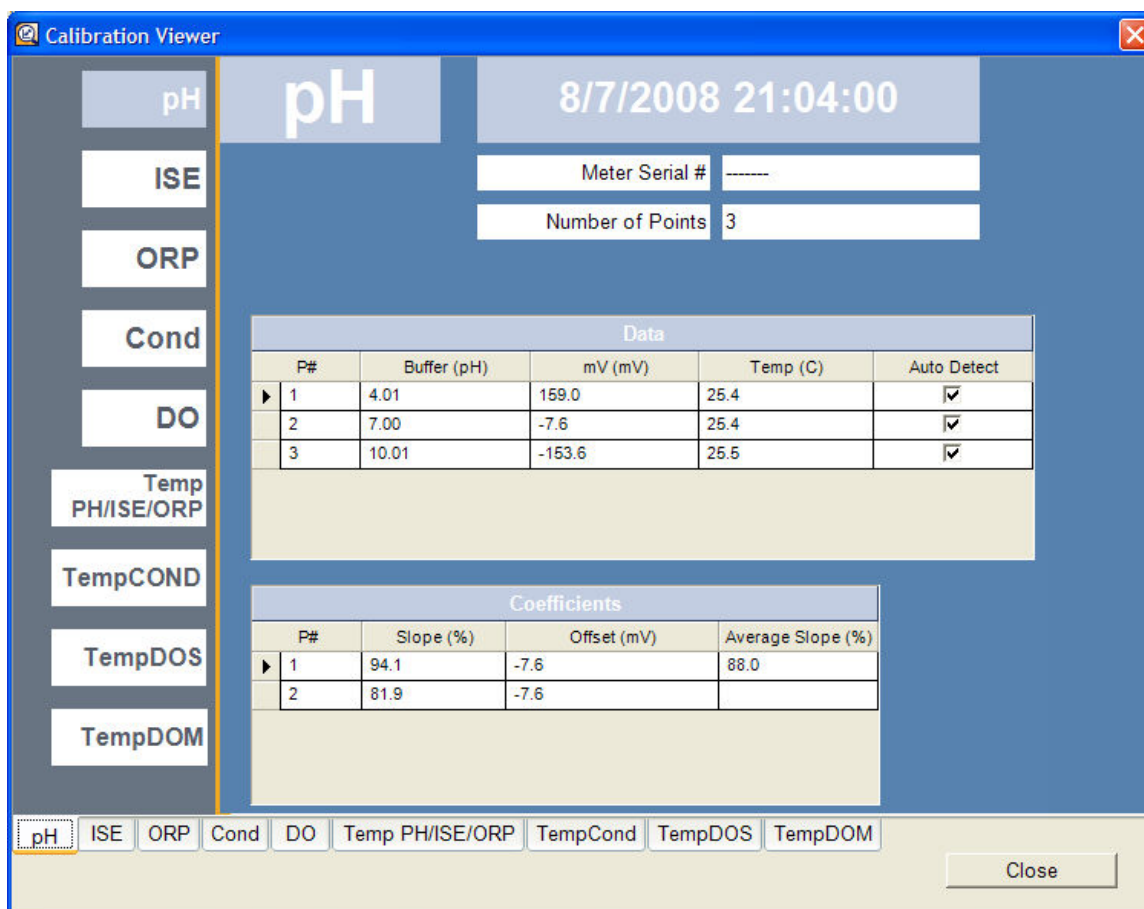
Viewing Calibrations

The most recent calibrations for each measurement type (pH, ISE, Orp, Cond, DO and Temp) are maintained on the Meter for each of the ten methods. When the [Active Method](#) is changed (e.g. from Method #2 to Method #7), the active calibrations are also changed.

The current calibrations for the Active Method may be viewed by clicking the "View Calibration..." button.



The current Calibrations for all measurement types supported by the Meter will be uploaded from the Meter and displayed in the following dialog.



Calibration Viewer

pH 8/7/2008 21:04:00

Meter Serial # -----

Number of Points 3

Data				
P#	Buffer (pH)	mV (mV)	Temp (C)	Auto Detect
1	4.01	159.0	25.4	<input checked="" type="checkbox"/>
2	7.00	-7.6	25.4	<input checked="" type="checkbox"/>
3	10.01	-153.6	25.5	<input checked="" type="checkbox"/>

Coefficients			
P#	Slope (%)	Offset (mV)	Average Slope (%)
1	94.1	-7.6	88.0
2	81.9	-7.6	

pH ISE ORP Cond DO Temp PH/ISE/ORP TempCOND TempDOS TempDOM

Close

Click on the appropriate Button or tab to display the calibration for a particular measurement type.

The date and time at the top represents the date and time when the calibration was performed.

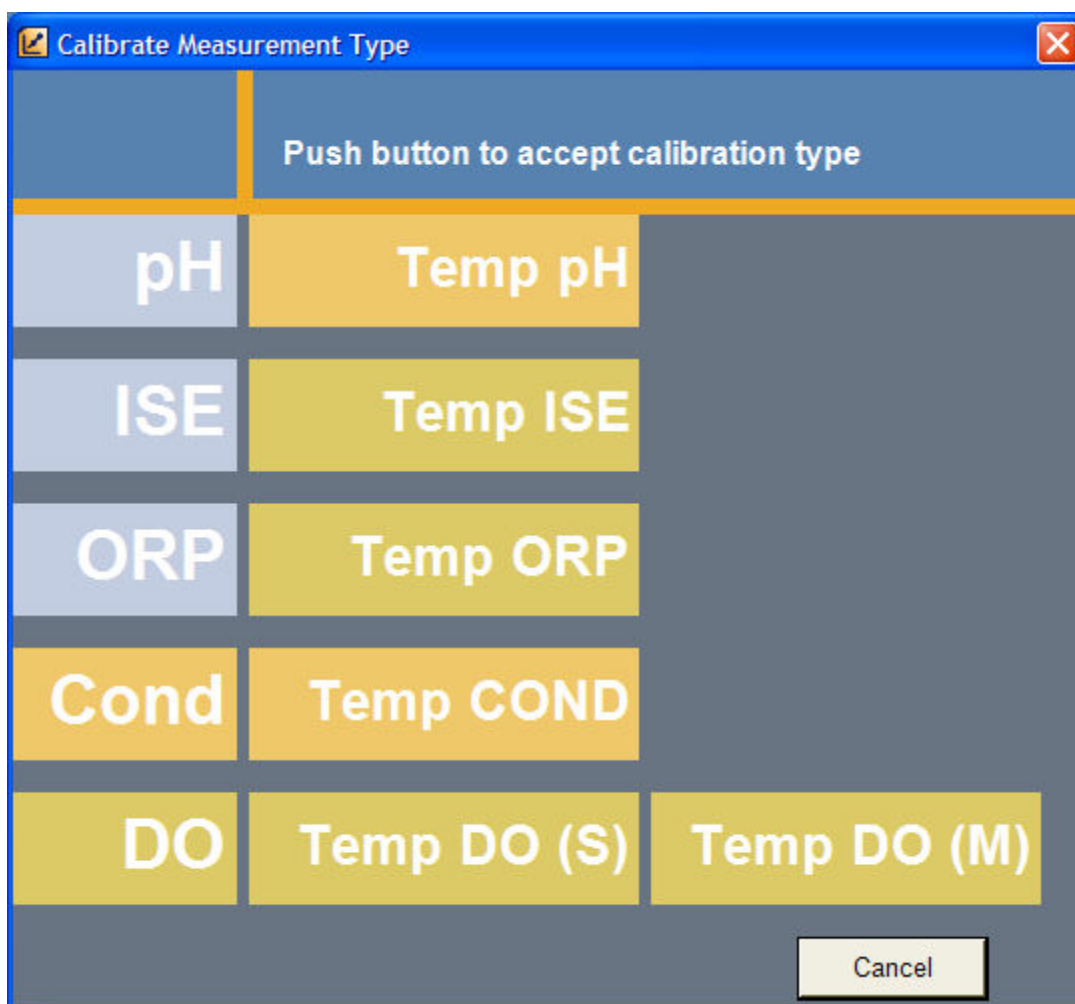
Calibration

Calibration is the process of determining the Meter response at different concentration levels using known standards.

Click on the Calibrate... toolbar button to run calibration for any of the electrode types using the currently active Method on the Meter:



Select the Calibration Type on the following Dialog by clicking the appropriate button. Depending on your Meter model, not all calibration types will be available. The example below depicts a Meter model that supports all calibration types:



Select Calibration Type

Once the calibration type has been chosen, you will be guided through the calibration process.

The Calibration procedure for main parameter like pH / Cond / ISE / DO follows the same calibration steps . You will -

1. Enter the Number of Standards you wish to run (up to a maximum of five)
2. Decide which Standards will be "Auto-detected" and which will be entered manually and enter standard values for standards that will be determined manually
3. Start the calibration process by placing the probe into the first standard and clicking START
4. Run each standard in turn by placing the probe into the next standard after viewing and accepting the Meter response for the previous standard.
5. You may press "< Back" at any time to review previous screens.
6. You may press "Cancel" at any time during the calibration process in order to abort the entire run. If you cancel, the previous calibration on the Meter is unaffected and will remain valid.

When the last standard point is accepted, you can no longer cancel. A summary of the calibration results along with calculated slopes and offsets will be displayed.

Although the process of calibration is essentially the same for all calibration types, there are some differences that make each calibration unique. For this reason, each calibration type is explained individually. Click on the link below for an explanation of each calibration type.

[pH Calibration](#)

[ISE Calibration](#)

[ORP Calibration](#)

[Cond Calibration](#)

[DO Calibration](#)

The Calibration procedure for Temperature (pH/ ISE / ORP /Cond/ DO Membrane / DO Solution) follows the same calibration steps . You will -

1. Enter the Calibration Temperature.
2. Start the calibration process by placing the Temperature probe into the solution and clicking START
3. Press Next button to accept the Calibration .
4. You may press "Cancel" at any time during the calibration process in order to abort the entire run. If you cancel, the previous calibration on the Meter is unaffected and will remain valid.

When the calibration is accepted, you can no longer cancel. A summary of the calibration results will be displayed. Click on the link below for an explanation of Temperature Calibration .

[Temperature Calibration](#)

pH Calibration

pH Calibration occurs in a series of sequential steps. The first step is to enter the number of standards you wish to run and also to specify which standards will be run.

Calibrating the pH electrode may be performed entirely manually, entirely automatically, or a mixture of both. Up to five (5) pH standards may be run.

1. Set the number of standards by clicking the up or down arrow to the right of the number as shown below. As the number of standards changes, the number of visible points will change.
2. Specify whether the standard will be automatically recognized by clicking the "Auto-detect" box next to each standard value.

PH Calibration

pH This dialog will step you through the process of calibrating the pH electrode.

Buffer Set: USA

Enter Number of Standards: 3

P1	0.0	pH	<input checked="" type="checkbox"/> Auto-detect
P2	0.0	pH	<input checked="" type="checkbox"/> Auto-detect
P3	0.0	pH	<input checked="" type="checkbox"/> Auto-detect

Cancel < Back Next > Finish

Auto-Buffer Recognition

All Orion Star Meter models have the ability to auto-detect certain pH standards, which depends on the Buffer Set being used. The Buffer Set (USA or Euro) is specified in the Active Method.

1. USA/Orion buffers : 1.68, 4.01, 7.01, 10.01, 12.46
2. Euro : 1.68, 4.01, 6.86, 9.15

If you are using either of these buffer sets, enter the number of standards you will be using and check all "Auto-detect" boxes on. The point values will be set to 0.0 and disabled. Since all standards are recognized automatically, they can be run in any order.

Manual Calibration

If auto-buffer recognition is not going to be used, the pH standards must be entered manually. To specify a manual standard, turn off the Auto-detect box next to the standard. Then enter the pH standard value. If desired, some standards may be auto-detected and some may be manually entered.

P1	<input type="text" value="4.0"/>	pH	<input type="checkbox"/> Auto-detect
P2	<input type="text" value="7.0"/>	pH	<input type="checkbox"/> Auto-detect
P3	<input type="text" value="10.0"/>	pH	<input type="checkbox"/> Auto-detect

When you have finished entering the standard information, press "Next >". The Calibration Start page is displayed. Place the pH Electrode in the specified standard and press Start. If the standard is auto-recognized then a standard value will not be specified; in this case you may run the standards in any order.

P1 Calibration

pH Place the electrode in the first buffer, press START and wait for stable reading

P1 **START**

Buffer Standard : (Auto-detect)

Reading (mV) :

Temperature (oC) :

Cancel <Back Next > Finish

After pressing Start, the Meter will initiate pH Calibration and start measuring the first point. When the reading becomes stable, data will be returned and displayed in the window.

P1 Calibration

pH Place the electrode in the first buffer, press START and wait for stable reading

P1 START

Buffer Standard : 4.0 (Auto-detect)

Reading (mV) : 176.0

Temperature (oC) : 25.0

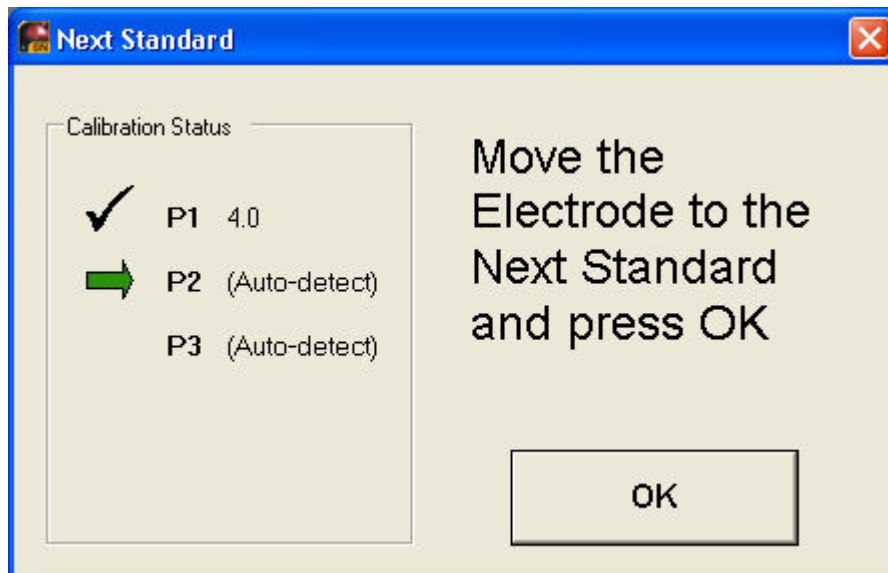
Press 'Next >' to accept the current reading

Cancel <Back Next > Print

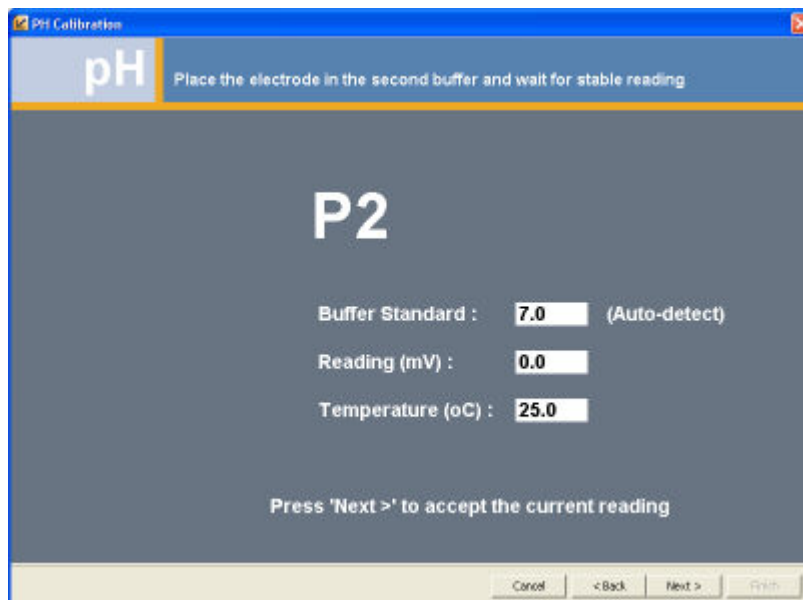
Press "Next >" to accept the current reading and continue to the next point. Do not remove the electrode from the standard until after you have accepted the current reading.

Even though the Meter has returned a stable value, if the electrode is moved, it can become unstable again and the Meter will return another reading after it has re-stabilized. Until you actually accept the point, additional returned readings will be applied to the current point.

After accepting the current reading for the current point, you may remove the electrode from the standard, rinse and place it into the next standard. The following dialog will be displayed after pressing "Next >".



Move the electrode to the next standard and click OK. Moving the electrode will cause the Meter to become unstable and start the next reading automatically. The Next standard (P2) will be displayed. Once the reading becomes stable, the measurement will be returned and displayed in the window.



Continue in the same manner until you have accepted the data for all standards. On the last point, pressing "Next >" will accept the last point and display a calibration summary which depicts the Meter response for each standard and the calculated coefficients:

The screenshot shows the 'PH Calibration' window with a title bar. Inside, there's a header with 'pH' and the instruction 'Review the calibration results and press finish'. Below this, there are two tables: 'Data' and 'Coefficients'. The 'Data' table has columns for P#, Buffer (pH), mV (mV), Temp (C), and Auto Detect. The 'Coefficients' table has columns for P#, Slope (%), and Offset (mV). At the bottom, there are buttons for 'Cancel', '< Back', 'Next >', and 'Finish'.

Data				
P#	Buffer (pH)	mV (mV)	Temp (C)	Auto Detect
1	4.0	176.0	25.0	<input checked="" type="checkbox"/>
2	7.0	0.0	25.0	<input checked="" type="checkbox"/>
3	10.0	-175.0	25.0	<input checked="" type="checkbox"/>

Coefficients		
P#	Slope (%)	Offset (mV)
1	99.2	0.0
2	99.2	0.0

At this point, the calibration is complete. Press "Finish" to exit.

Note: Meter readings (mV) in the summary screen may be slightly different than the values displayed and accepted on previous screens for the individual standards. This is normal and is caused by slight drift that can occur between the time the reading was determined to be "stable" and returned for display, and the time the value was accepted by the user. The values depicted in the summary screen are the actual values used to determine the final coefficients.

ISE Calibration

ISE Calibration occurs in a series of sequential steps. The first step is to enter the number of standards you wish to run and also to specify which standards will be run.

Calibrating the ISE electrode is performed entirely manually. Up to five (5) ISE standards may be run.

1. Set the number of standards by clicking the up or down arrow to the right of the number as shown below. As the number of standards changes, the number of visible points will change.
2. Auto-detect is turned off and disabled.

3. The units (ppb in the case below) and the #significant digits is specified by the Method.

ISE Calibration

This dialog will step you through the process of calibrating the ISE electrode.

Enter Number of Standards **3**

P1	<input type="text" value="1.00"/>	ppb	<input type="checkbox"/> Auto-detect
P2	<input type="text" value="10.0"/>	ppb	<input type="checkbox"/> Auto-detect
P3	<input type="text" value="100"/>	ppb	<input type="checkbox"/> Auto-detect

Cancel < Back Next > Finish

Manual Calibration

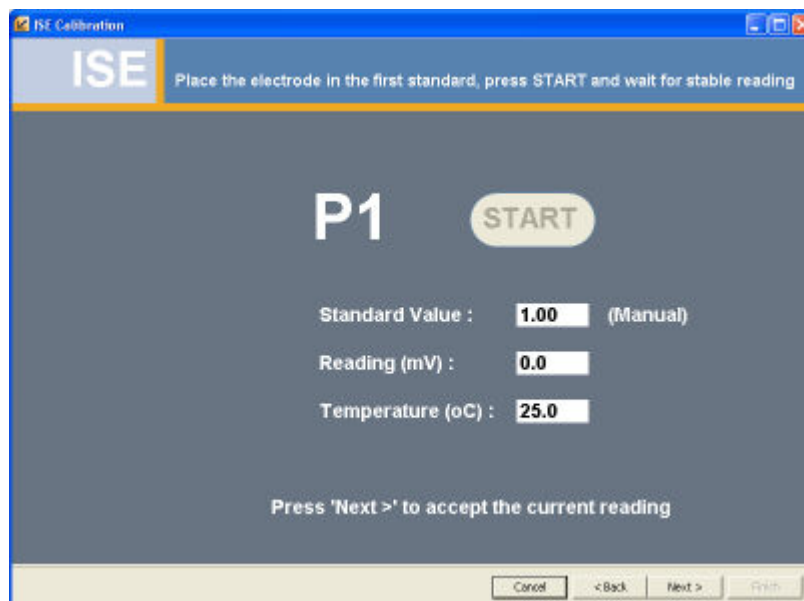
All ISE standard values must be entered manually.

P1	<input type="text" value="1.00"/>	ppb	<input type="checkbox"/> Auto-detect
P2	<input type="text" value="10.0"/>	ppb	<input type="checkbox"/> Auto-detect
P3	<input type="text" value="100"/>	ppb	<input type="checkbox"/> Auto-detect

When you have finished entering the standard information, press "Next >". The Calibration Start page is displayed. Place the ISE Electrode in the specified standard and press Start.



After pressing Start, the Meter will initiate ISE Calibration and start measuring the first point. When the reading becomes stable, data will be returned and displayed in the window.

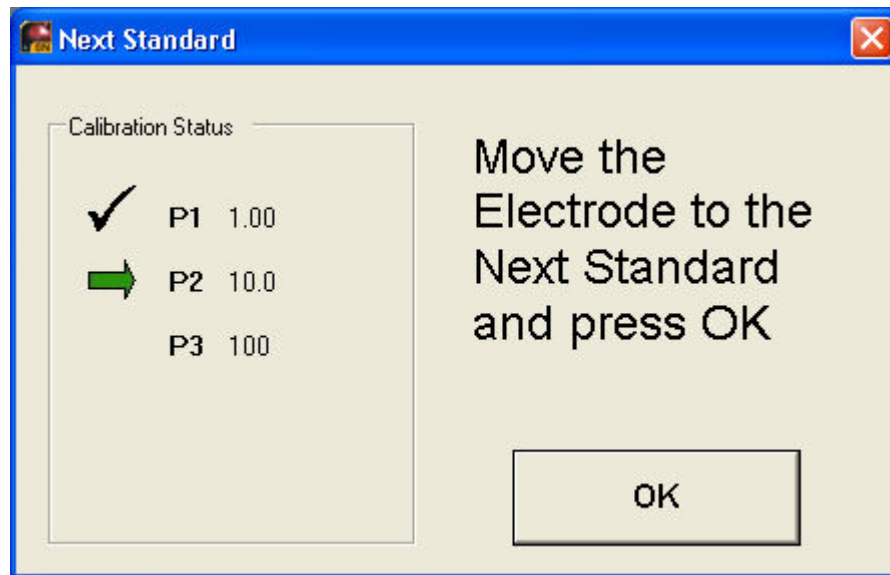


Press "Next >" to accept the current reading and continue to the next point. Do not remove the electrode from the standard until after you have accepted the current reading.

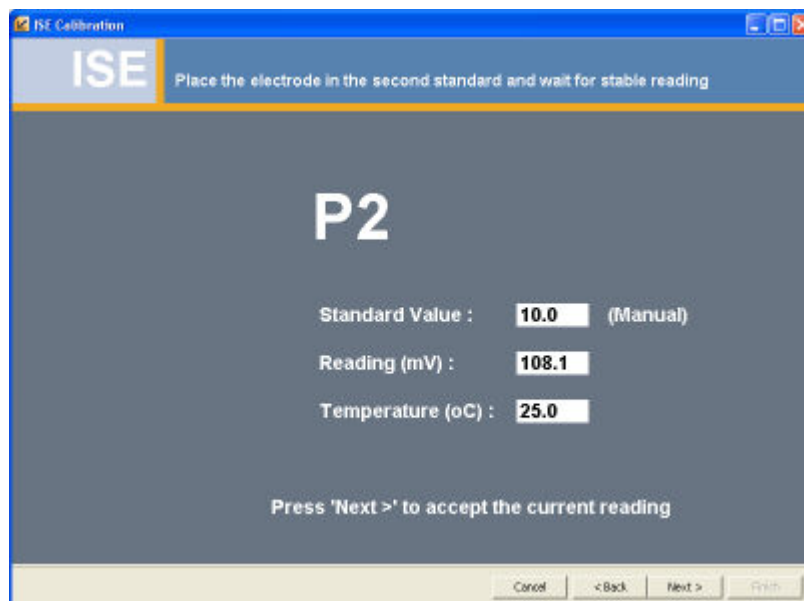
Even though the Meter has returned a stable value, if the electrode is moved, it can become unstable again and the Meter will return another reading after

it has re-stablized. Until you actually accept the point, additional returned readings will be applied to the current point.

After accepting the current reading for the current point, you may remove the electrode from the standard, rinse and place it into the next standard. The following dialog will be displayed after pressing "Next >".



Move the electrode to the next standard and click OK. Moving the electrode will cause the Meter to become unstable and start the next reading automatically. The Next standard (P2) will be displayed. Once the reading becomes stable, the measurement will be returned and displayed in the window.



Continue in the same manner until you have accepted the data for all standards. On the last point, pressing "Next >" will accept the last point and display a calibration summary which depicts the Meter response for each standard and the calculated coefficients:

The screenshot shows the 'ISE Calibration' window. At the top, it says 'Review the calibration results and press finish'. Below this, there are two tables: 'Data' and 'Coefficients'.

Data			
P#	Concentration (ppb)	mV (mV)	Temp (C)
▶ 1	1.00	0.0	25.0
2	10.0	108.1	25.0
3	100	163.0	25.0

Coefficients		
#	Slope (mV/dec)	Offset (mV)
▶ 1	108.10	0.0
2	54.90	63.2

At the bottom of the window, there are four buttons: 'Cancel', '< Back', 'Next >', and 'Finish'.

At this point, the calibration is complete. Press "Finish" to exit.

Note: Meter readings (mV) in the summary screen may be slightly different than the values displayed and accepted on previous screens for the individual standards. This is normal and is caused by slight drift that can occur between the time the reading was determined to be "stable" and returned for display, and the time the value was accepted by the user. The values depicted in the summary screen are the actual values used to determine the final coefficients

ORP Calibration

ORP Calibration occurs in a single step. Only one standard is run.

Calibrating the ORP electrode may be performed automatically or manually.

1. Specify whether the standard will be automatically recognized by clicking the "Auto-detect" box next to the standard value.

ORP Calibration

ORP This dialog will step you through the process of calibrating the ORP electrode.

Enter Number of Standards: 1

P1 0.0 mV ☒ Auto-detect

Cancel < Back Next > Finish

Auto-Standard Recognition

If you are using a Thermo ORP standard, check the "Auto-detect" box on. The point value will be set to 0.0 and disabled.

Manual Calibration

If auto-standard recognition is not going to be used, the ORP standard value must be entered manually. To specify a manual standard, turn off the Auto-detect box next to the standard. Then enter the ORP standard value.

When you have finished entering the standard information, press "Next >". The Calibration Start page is displayed. Place the ORP electrode in the specified standard and press Start. If the standard is auto-recognized then a standard value will not be specified.

The screenshot shows the 'ORP Calibration' window. At the top, there's a blue header with 'ORP' in white and a subtitle 'Place the electrode in the standard, press START and wait for a stable reading'. Below this, the text 'P1' is displayed in large white font. To the right of 'P1' is a blue button labeled 'START'. Underneath, there are three rows of labels and input fields: 'Standard Value :', 'Reading (mV) :', and 'Temperature (oC) :'. Each label is followed by an empty white input box. To the right of the 'Standard Value' input box, the text '(Auto-detect)' is visible. At the bottom of the window, there are four buttons: 'Cancel', '< Back', 'Next >', and 'Print'.

After pressing Start, the Meter will initiate ORP Calibration and start measuring the first point. When the reading becomes stable, data will be returned and displayed in the window.

This screenshot shows the same 'ORP Calibration' window after the first point has been measured. The 'START' button is now greyed out. The input fields are populated with the following values: 'Standard Value' is 20.1, 'Reading (mV)' is 20.1, and 'Temperature (oC)' is 25.0. The text '(Auto-detect)' remains to the right of the 'Standard Value' input. Below the input fields, a new instruction appears: 'Press 'Next >' to accept the current reading'. The bottom buttons ('Cancel', '< Back', 'Next >', 'Print') remain the same.

Press "Next >" to accept the current reading and display a calibration summary which depicts the Meter response and the calculated offset:

Data				
mV Measured (mV)	mV Entered (mV)	Offset (mV)	Temp (C)	Auto Detect
20.1	20.1	0.0	25.0	<input type="checkbox"/>

At this point, the calibration is complete. Press "Finish" to exit.

Note: The measured Meter reading (mV) in the summary screen may be slightly different than the value displayed and accepted on the previous screen for the individual standard. This is normal and is caused by slight drift that can occur between the time the reading was determined to be "stable" and returned for display, and the time the value was accepted by the user. The value depicted in the summary screen is the actual values used to determine the final offset.

Conductivity Calibration

Conductivity Calibration occurs in a series of sequential steps. The first step is to enter the number of standards you wish to run and also to specify which standards will be run.

Calibrating the Conductivity electrode may be performed entirely manually, entirely automatically, or a mixture of both. Up to five (5) Conductivity standards may be run.

1. Set the number of standards by clicking the up or down arrow to the right of the number as shown below. As the number of standards changes, the number of visible points will change.

- Specify whether the standard will be automatically recognized by clicking the "Auto-detect" box next to each standard value.

COND Calibration

Cond This dialog will step you through the process of calibrating the Cond electrode.

Enter Number of Standards **3**

Important: For manual entries, enter the values at sample temperature (not compensated to ref. temperature)

P1	100	uS/cm	<input checked="" type="checkbox"/> Auto-detect
P2	1413	uS/cm	<input checked="" type="checkbox"/> Auto-detect
P3	12900	uS/cm	<input checked="" type="checkbox"/> Auto-detect

Cancel < Back Next > Finish

Auto-Standard Recognition

All Orion Star Meter models have the ability to auto-detect the following Conductivity standards.

- 100 uS/cm
- 1413 uS/cm
- 12900 uS/cm (also seen as 12.9 mS/cm)

If you are using these standards, enter the number of standards you will be using and check all "Auto-detect" boxes on. The point values will be set to 0.0 and disabled. Since all standards are recognized automatically, they can be run in any order.

Manual Calibration

If auto-standard recognition is not going to be used, the conductivity standards must be entered manually (as shown above). To specify a manual standard, turn off the Auto-detect box next to the standard. Then enter the conductivity standard value.

If desired, some standards may be auto-detected and some may be manually entered. For manual entries, enter the conductivity at the calibration temperature.

Important: For manual entries, enter the values at sample temperature (not compensated to ref. temperature)	P1	100	uS/cm	<input type="checkbox"/> Auto-detect
	P2	1413	uS/cm	<input type="checkbox"/> Auto-detect
	P3	12900	uS/cm	<input type="checkbox"/> Auto-detect

Note: when entering conductivity values, always enter in uS/cm units and enter the values at sample temperature (i.e. not compensated to reference temperature)

When you have finished entering the standard information, press "Next >". The Calibration Start page is displayed. Place the conductivity electrode in the specified standard and press Start. If the standard is auto-recognized then a standard value will not be specified; in this case you may run the standards in any order.

After pressing Start, the Meter will initiate Conductivity Calibration and start measuring the first point. When the reading becomes stable, data will be returned and displayed in the window.

COND Calibration

Cond

Place the electrode in the first standard, press START and wait for stable reading

P1

START

Standard Value (uS/cm) : 100 (Manual)

Reading (uS) : 95

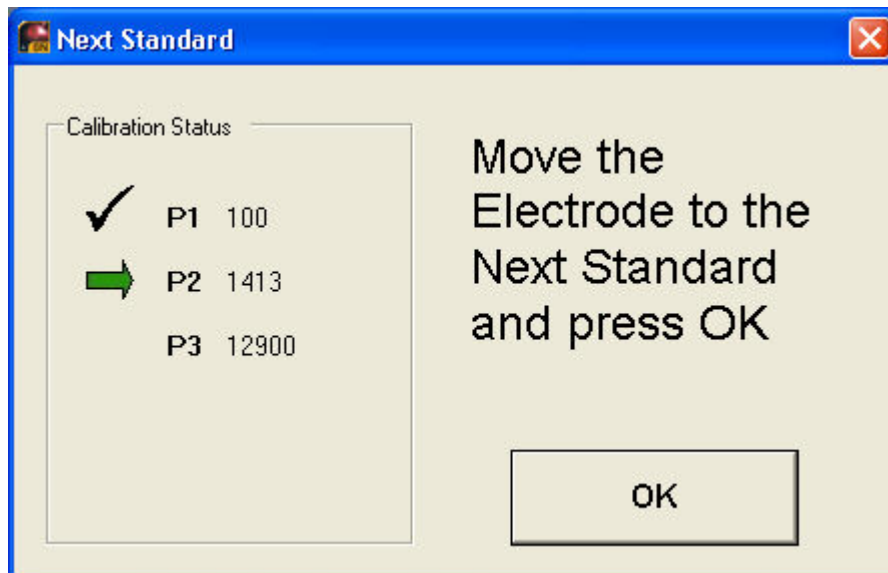
Temperature (oC) : 25.0

Cancel <Back Next > Exit

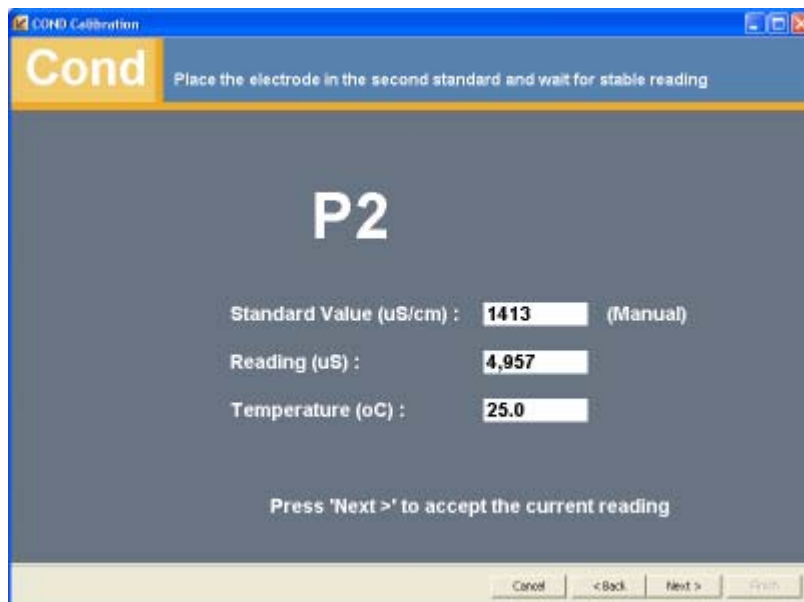
Press "Next >" to accept the current reading and continue to the next point. Do not remove the electrode from the standard until after you have accepted the current reading.

Even though the Meter has returned a stable value, if the electrode is moved, it can become unstable again and the Meter will return another reading after it has re-stabilized. Until you actually accept the point, additional returned readings will be applied to the current point.

After accepting the current reading for the current point, you may remove the electrode from the standard, rinse and place it into the next standard. The following dialog will be displayed after pressing "Next >".



Move the electrode to the next standard and click OK. Moving the electrode will cause the Meter to become unstable and start the next reading automatically. The Next standard (P2) will be displayed. Once the reading becomes stable, the measurement will be returned and displayed in the window.



Continue in the same manner until you have accepted the data for all standards. On the last point, pressing "Next >" will accept the last point and display a calibration summary which depicts the Meter response for each standard and the calculated coefficients:

COND Calibration

Cond Review the calibration results and press finish

Data				
P#	Conductivity (uS)	Conductance (uS)	Temp (C)	Auto Detect
1	100.0	61.6	25.0	<input type="checkbox"/>
2	1413	4960	25.0	<input type="checkbox"/>
3	12900	89600	25.0	<input type="checkbox"/>

Coefficients		
P#	Slope (uS/cm)	Offset (uS/cm)
1	1.624	0.00
2	0.268	83.49
3	0.136	740.3

Cancel < Back Next > Finish

At this point, the calibration is complete. Press "Finish" to exit.

Note: Meter readings (uS) in the summary screen may be slightly different than the values displayed and accepted on previous screens for the individual standards. This is normal and is caused by slight drift that can occur between the time the reading was determined to be "stable" and returned for display, and the time the value was accepted by the user. The values depicted in the summary screen are the actual values used to determine the final coefficients.

Dissolved Oxygen Calibration

DO Calibration occurs in a single step. Only one standard is run.

Calibrating the DO electrode is performed automatically or manually, depending on the DO Calibration Type.

DO Calibration Type	Units	Auto-Recognize
---------------------	-------	----------------

Water-Saturated Air	% Sat	Auto-Detect
Air-Saturated Water	% Sat	Auto-Detect
Winkler	mg/L	Manual
Zero	(no unit)	Auto-Detect

1. Calibration Type is specified in the Method.
2. Decimal Resolution is specified in the Method.
3. Pressure Compensation type is specified in the Method (Automatic / Manual)
4. Salinity Compensation type is specified in the Method (Automatic / Manual)

DO Calibration

This dialog will step you through the process of calibrating the DO electrode.

DO

CAL Type : water/sat/air (%sat)

Enter Number of Standards : 1

P1 100 %Sat ☒ Auto-detect

Cancel < Back Next > Finish

Auto-Standard Recognition

The DO Calibration Types *Water-Saturated Air*, *Air-Saturated-Water* and *Zero* are all performed in Auto-Detect mode only.

Manual Calibration

If the DO Calibration Type is *Winkler*, the DO standard value must be entered manually. Enter the known DO standard value in mg/L.

When you have finished entering the standard information, press "Next >". The Calibration Start page is displayed. Place the DO electrode in the specified standard and press Start. If the standard is auto-recognized then a standard value will not be specified.

DO Calibration

DO

Place the electrode in the standard, press START and wait for a stable reading

P1

START

Standard Concentration (%Sat) : (Auto-detect)

Current Reading (nA) :

Temperature (oC) :

Cancel < Back Next > Finish

After pressing Start, the Meter will initiate DO Calibration and start measuring the first point. When the reading becomes stable, data will be returned and displayed in the window.

DO Place the electrode in the standard, press START and wait for a stable reading

P1 **START**

Standard Concentration (%Sat) : **102.3** (Auto-detect)

Current Reading (nA) : **997**

Temperature (oC) : **25.0**

Cancel < Back Next > Finish

Press "Next >" to accept the current reading and display a calibration summary which depicts the Meter response:

DO Review the calibration results and press finish

Data						
P#	Current (nA)	Conc (% sat)	Temp (C)	Pressure (mmHg)	Salinity Corr (ppt)	Auto Detec
▶ 1	804.0	102.3	25.0	755.1	0.0	Γ

Cancel < Back Next > Finish

The Meter maintains a "Zero" point for DO Calibrations and is by default 0.0 (0 %Sat = 0 nA). When working in low concentrations (near zero) a small error due to residual current in the probe may be "zeroed-out" by running a Zero standard. The Zero standard inherits units and result from the previous high standard calibration, resulting in a two-point calibration. Therefore, a high DO standard must be run before running a Zero standard. When there is a corresponding zero point that is not exactly zero, it will always be displayed in the DO Calibration summary.

At this point, the calibration is complete. Press "Finish" to exit.

Note: The measured Meter reading (nA) in the summary screen may be slightly different than the value displayed and accepted on the previous screen for the individual standard. This is normal and is caused by slight drift that can occur between the time the reading was determined to be "stable" and returned for display, and the time the value was accepted by the user. The value depicted in the summary screen is the actual value used.

Temperature Calibration

Temperature Calibration occurs in three steps. The first step is to enter the Calibration Temperature .

Temperature Calibration

pH / ISE / ORP Place Temperature probe in the solution , Wait for stable reading , then press START

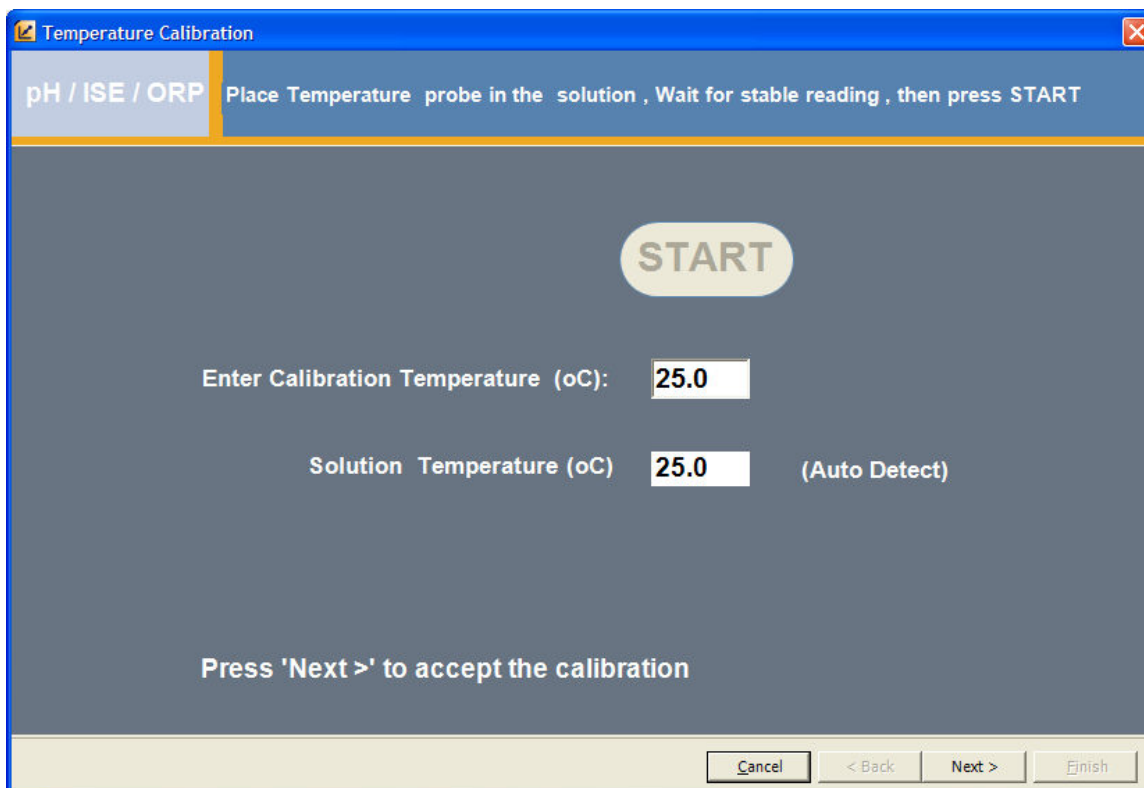
START

Enter Calibration Temperature (oC): 25.0

Solution Temperature (oC) (Auto Detect)

Cancel < Back Next > Finish

Place the Temperature probe the specified solution and press Start. After pressing Start, the Meter will initiate Temperature Calibration and start measuring the first point. When the reading becomes stable, data will be returned and displayed in the window.



The image shows a software window titled "Temperature Calibration". The window has a blue header bar with the title and a close button. Below the header, there is a light blue bar with the text "pH / ISE / ORP" and "Place Temperature probe in the solution , Wait for stable reading , then press START". The main area of the window is dark grey. In the center, there is a large, light grey, rounded rectangular button labeled "START". Below this button, there are two input fields. The first is labeled "Enter Calibration Temperature (oC):" and contains the value "25.0". The second is labeled "Solution Temperature (oC)" and contains the value "25.0", with the text "(Auto Detect)" to its right. Below these input fields, there is a line of text that says "Press 'Next >' to accept the calibration". At the bottom of the window, there is a light grey bar containing four buttons: "Cancel", "< Back", "Next >", and "Finish".

Temperature Calibration

pH / ISE / ORP Place Temperature probe in the solution , Wait for stable reading , then press START

START

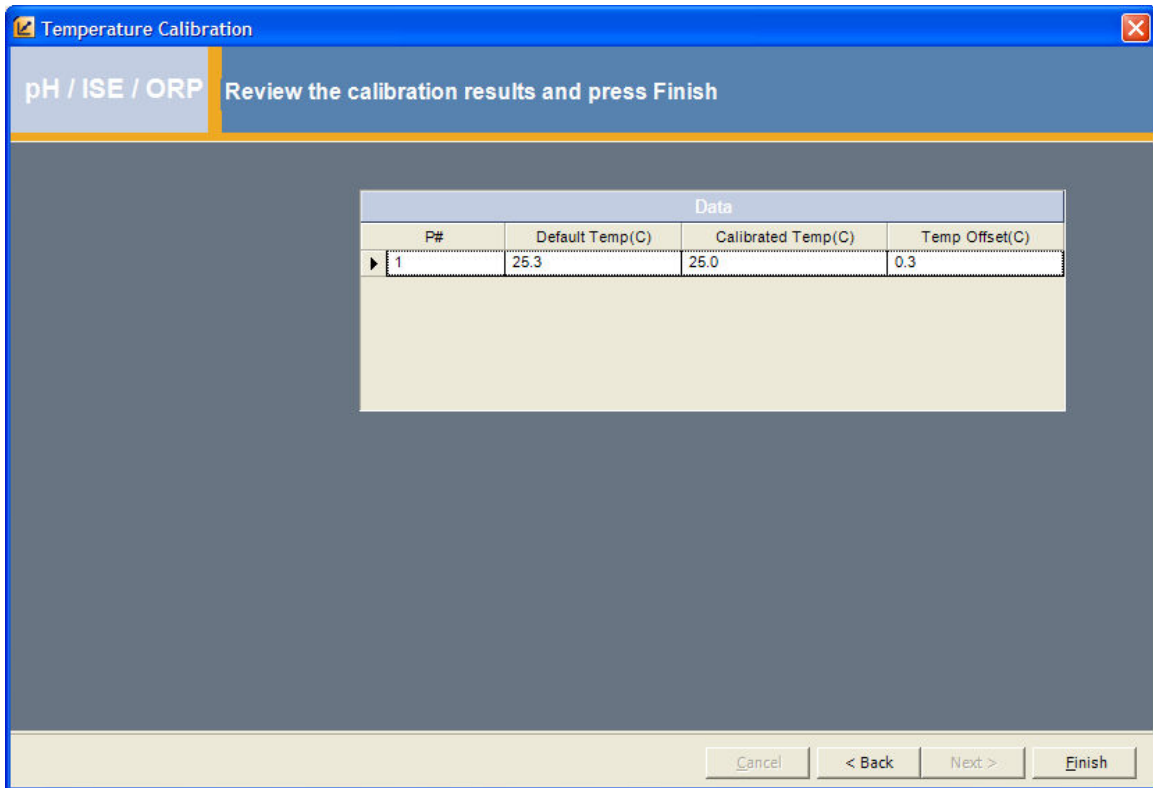
Enter Calibration Temperature (oC): 25.0

Solution Temperature (oC) 25.0 (Auto Detect)

Press 'Next >' to accept the calibration

Cancel < Back Next > Finish

Press "Next >" to accept the current reading .Pressing "Next >" will accept the point and display a calibration summary which depicts the Meter response .



The screenshot shows a software window titled "Temperature Calibration" with a blue header bar. Below the header, there is a tab labeled "pH / ISE / ORP" and a subtitle "Review the calibration results and press Finish". The main area of the window displays a table with the following data:

Data			
P#	Default Temp(C)	Calibrated Temp(C)	Temp Offset(C)
▶ 1	25.3	25.0	0.3

At the bottom of the window, there are four buttons: "Cancel", "< Back", "Next >", and "Finish".

At this point, the calibration is complete. Press "Finish" to exit.

Advanced

Research and Reporting

A powerful data research and reporting application called LabSpeed Navigator may be run in order to perform the following functions on stored data:

- Sample browsing and retrieval
- Data display in drill-down grid format
- Data display in interactive charts and plots
- Reporting using standard report layouts
- Printing and Exporting

If the 21-CFR option is turned on, LabSpeed Navigator may also be used to:

- Browse 21-CFR authored samples and review digital signature histories
- Add digital signatures to samples
- Display the Journal (21-CFR Audit log)
- Validate Data

Click on the Research... toolbar button to run LabSpeed Navigator.



LabSpeed Navigator is a standalone application and contains its own complete Help document. For more information about how to use LabSpeed Navigator, refer to the Help Contents on the program's main menu bar.

Administrator Setup

NavAdmin.exe

NavAdmin is a utility program where the administrator sets up defaults for the Navigator program, including the database, users and Meter communications. The NavAdmin program is also where the administrator will enable 21-CFR and setup 21-CFR user rights.

Note: Only a user with Windows administrator privileges is allowed to run NavAdmin. If a user who is not an Administrator attempts to run the program, a message will alert the user that he does not have sufficient privileges and the program will exit.

Run NavAdmin from the Start menu:

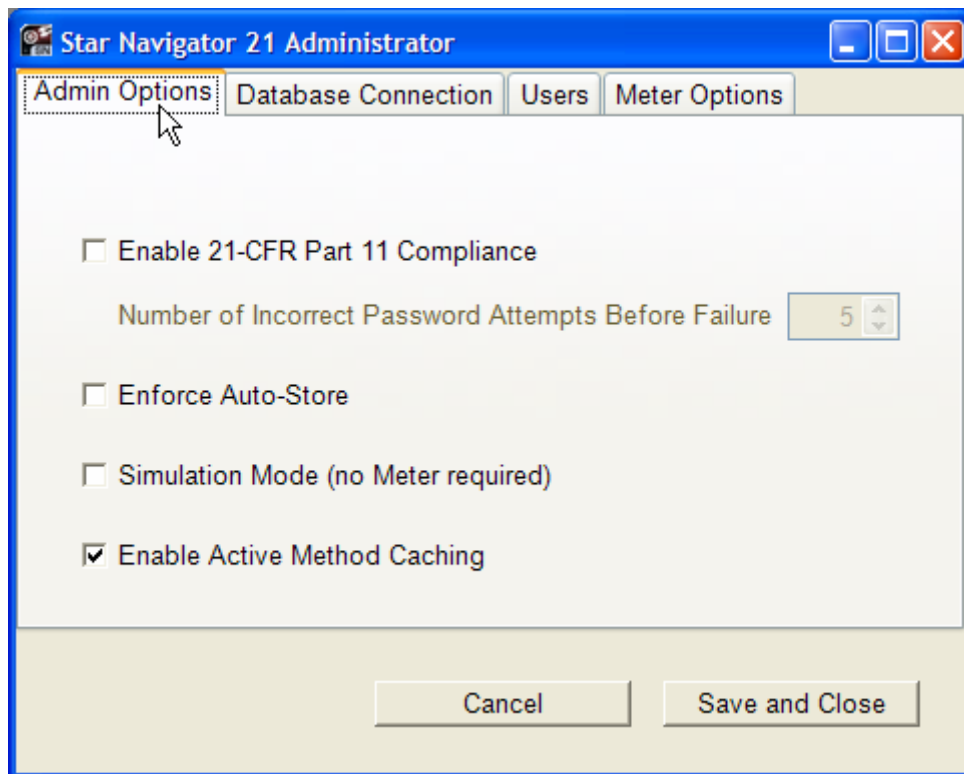
Start -> All Programs -> Thermo Star Navigator -> NavAdmin

or

Start -> All Programs -> Thermo Star Navigator 21 -> NavAdmin (21-CFR version)

The NavAdmin program is organized into four screens accessed by tabs at the top of the window. The four screens are

1. Admin Options
2. Database Connection
3. Users
4. Meter Options



Admin Options

Enable 21-CFR Part 11 Compliance

Toggle this option on in order to enable 21-CFR compliance.

Note: 21-CFR is not an option on all Navigator software versions. If your Navigator software does not support 21-CFR, this option will be disabled.

When 21-CFR compliance is turned on, the Navigator software will only allow users who have been given 21-CFR author rights to take measurements and

store data. In addition, the user is required to enter his password before every measurement is taken in order to verify his identity. An operator's log-in id, password and full name, once encrypted is considered a *digital signature* and is saved with every sample.

When 21-CFR compliance is turned on, a secondary option is enabled -- Number of Incorrect Password Attempts Before Failure. 21-CFR guidelines requires that some mechanism be in place to disallow password guessing and to fail a password entry after a certain number of tries. The default is 5, but may be set to a smaller number.

Enforce Auto-Store

Toggle this option on in order to force Auto-storage of all measurement data.

This option forces the Navigator software to always store all measurement data automatically. If 21-CFR is enabled, Auto-Store is a requirement; in this case Auto-Store will be checked and disabled.

Simulation Mode

Toggle this option on in order to run the Navigator software in simulation mode.

When in simulation, a Meter connection is ignored and all data is randomly created. This option is normally off, but may be useful in certain cases, such as testing and running demos without a physical instrument present.

Enable Active Method Caching

Toggle this option on in order to enable method caching.

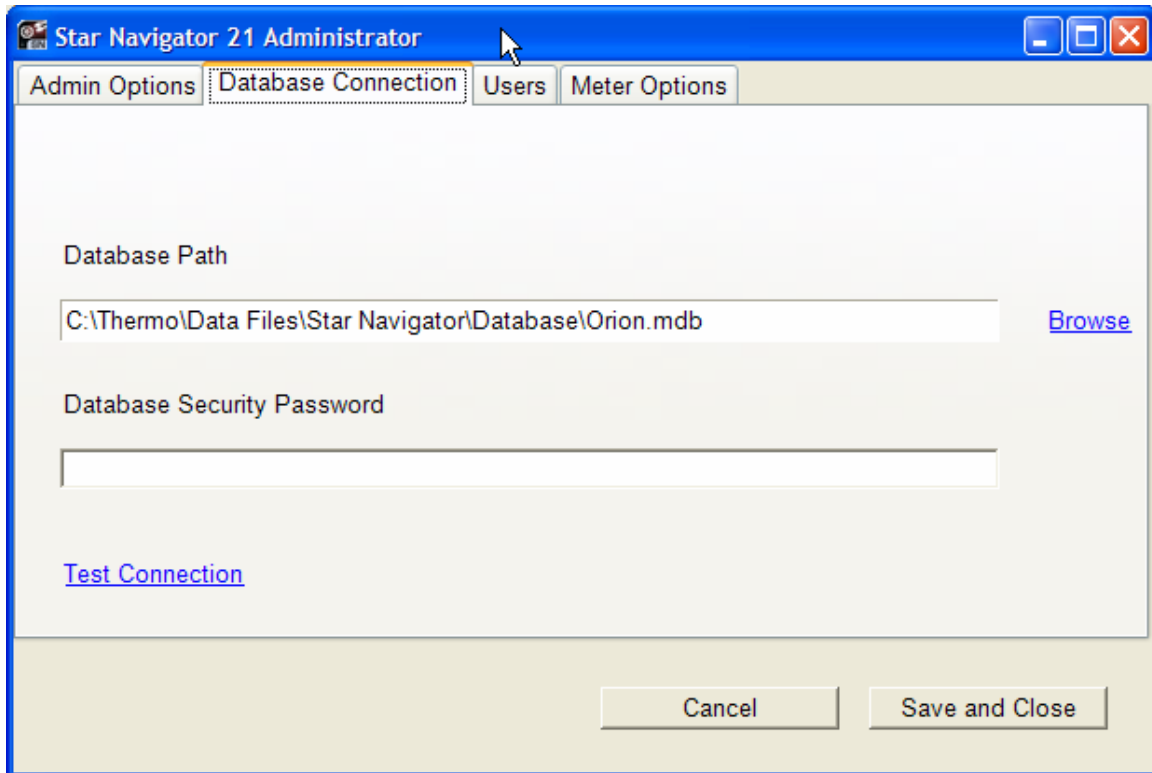
Caching is a technique that typically speeds up the Meter communications by eliminating redundant requests for data. When turned on, the Active Method and it's calibrations are "cached", or copied to the PC. A copy on the PC will be used until a change occurs, such as when the Active method changes.

Caching greatly reduces the time it takes to save sample data, since the active method and calibrations are also stored with each sample. If turned off, all information required by the PC will be retrieved from the Meter as needed, even if it hasn't changed.

Database Connection

Click on the Database Connection tab. This is where the administrator sets up the location and name of the database and the database password. This information is visible to the Administrator in the NavAdmin program.

Note: A default name and location is setup during install. Normally, the database name and location will not need to be changed, unless the database is moved, say, to a network.



Click [Browse](#) to browse your hard drive / network for the physical database to connect to.

By default, the database is not password protected and therefore not secure. To secure the database, the administrator must add a password to the database (A secure database is a requirement of the 21-CFR protocol). For instructions on how to do this, [click here](#). If the database is password protected, enter the password in the field entitled "Database Security Password".

When the database name and location have been specified, and the password entered (if there is one), click on [Test Connection](#) in order to verify the entered information. A message will indicate if the connection was successful.

If the database information is changed, exit NavAdmin by clicking "Save and Close". The database information will be encrypted and saved in an external configuration file. If you need to change other information requiring database access, such as Users, you will have to re-run the NavAdmin program.

Users

Click on the Users Tab and then click the "Load from Database" button. A list of the current Navigator users will be displayed in a grid.

Normally, users are added automatically when they log into Windows and run the Navigator software for the first time. When a user is added automatically, the following defaults are applied:

1. User Name = Windows log-in name
2. Full Name = Blank
3. Date Created = Now
4. Active = TRUE
5. CFR21Rights = FALSE
6. Edit Method = TRUE

In other words, a new user (if not 21-CFR) is given full rights to operate the Meter and modify methods.

In this screen, the administrator may activate/de-activate and modify permissions on a user-by-user basis.

Star Navigator 21 Administrator

Admin Options Database Connection **Users** Meter Options

Load from Database Save to Database

User List						
UserName	FullName	DateCreated	ModifyDate	Activ	CFR21Right	Edit Method
SlideRule	John S. Rule	10/12/2005 13:14:39	10/12/2005 13:14:39	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
jds	Joseph D. Smith			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

[New User](#)

Cancel Save and Close

Activate/De-activate

Toggle this option off to de-activate a user. User records cannot be deleted; they can only be de-activated. Nor can the user name and full name be modified once added. This is to ensure that historical data records still reference a specific author or other signatory even though the user may no longer be running the instrument. A user may be de-activated and re-

activated at any time. If a user's last name should change, the entire record must be de-activated and the user added again.

CFR21Rights (permission)

Toggle this option on to give the user permission to operate the Meter under 21-CFR. Note that this permission cannot be turned on unless the user has a Full Name. You must enter a full name for the user before you can turn on the 21-CFR permission.

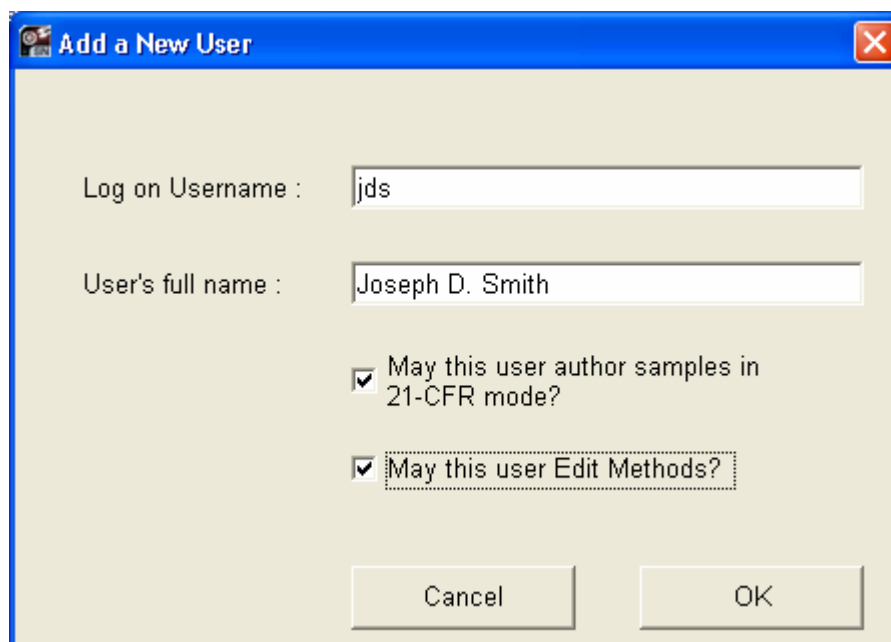
Edit Method (permission)

Toggle this option on to give the user permission to modify Methods. Without this permission, the user will not be able to view or modify Meter methods; however he will be able to change the Active Method and take measurements.

Full Name

Enter a full name for the user. This is a requirement for 21-CFR (but optional otherwise).

The administrator may manually add a new user by clicking the [New User](#) link. The following New User dialog will be displayed. Enter all information and click OK. The user will be added to the Navigator user list.



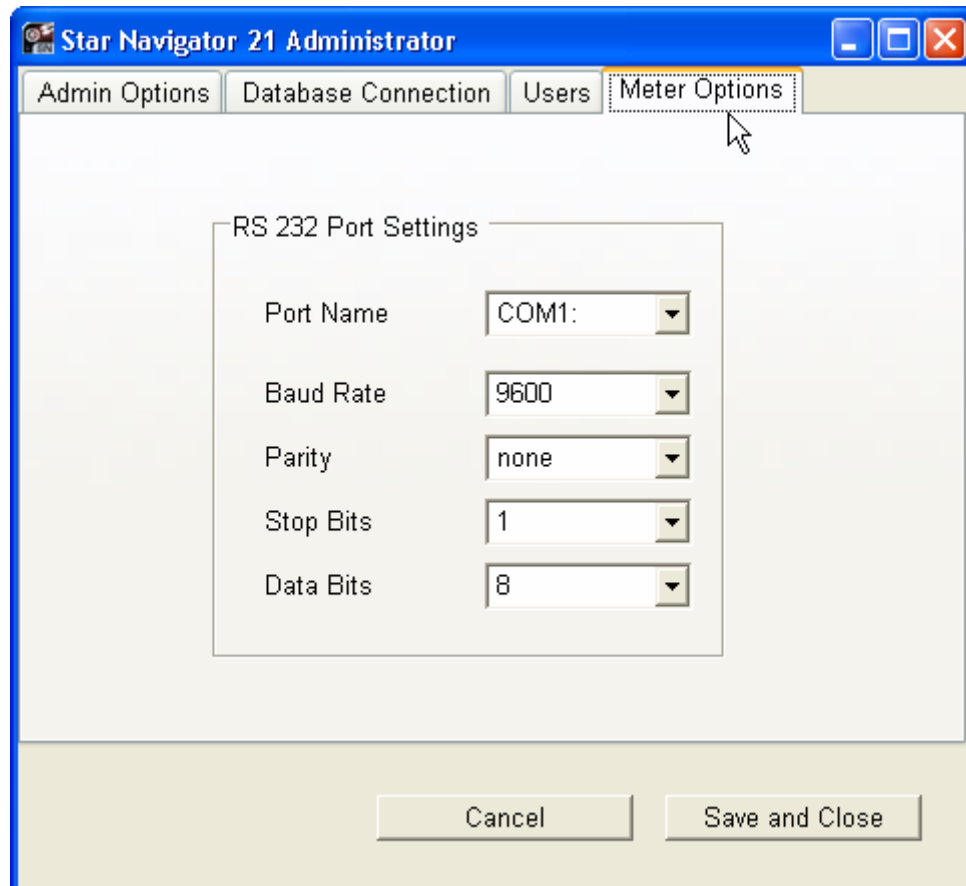
The screenshot shows a Windows-style dialog box titled "Add a New User". It has a blue title bar with a red close button in the top right corner. The dialog contains the following elements:

- A label "Log on Username :" followed by a text input field containing the text "jds".
- A label "User's full name :" followed by a text input field containing the text "Joseph D. Smith".
- Two checkboxes, both of which are checked:
 - "May this user author samples in 21-CFR mode?"
 - "May this user Edit Methods?"
- At the bottom, there are two buttons: "Cancel" on the left and "OK" on the right.

When finished modifying the user table, click "Save to Database" to make the changes permanent.

Meter Options

Communication with the Meter is via a standard RS232 Serial protocol. The serial communications setup parameters are pre-installed and normally do not need to be changed. However, the Meter does support different baud rates and other serial parameters. If the serial parameters are modified on the Meter, you must change them here to match:



Save Changes

To accept all changes on all screens and exit the NavAdmin program, click "Save and Close".

21-CFR Option

21-CFR Overview

The primary motivation behind 21-CFR part 11 protocol as set by FDA is to recognize the new role of digital processing in the laboratory and to set guidelines for electronic data collection and data storage procedures, which will guarantee the validity of data and electronic signatures.

The Navigator Software complies with all 21-CFR guidelines and in some cases goes beyond the recommendations to provide additional levels of data security.

The 21-CFR protocol focuses on the following primary validation mechanisms:

1. Administrator role
2. User rights and privileges
3. User Identification and Signing Electronic Records
4. Audit Trail
5. Database security
6. Data Validation

Windows Security

Navigator relies on the built-in Windows XP Security mechanism for determining the user's Role and validating a user's password. If the 21-CFR option is to be used, Windows XP is required.

Encryption

The Rijndael symmetric key cryptographic encryption algorithm, which uses a private 32-byte key and a private 16-byte initialization vector is used in all encryption and decryption procedures.

Data Validation

Once password protected, the Navigator database data storage mechanism is considered a "Closed" system by the 21-CFR protocol. A "Closed" system has many fewer restrictions imposed by the protocol in order to ensure data integrity. In a "Closed" system, data validation is not required by the 21-CFR protocol.

However, for added security, the Navigator software provides a mechanism to determine if the sample data stored to the database was later changed. A special encryption key that is derived from specific sample fields is saved with each sample record. Later, in the LabSpeed Navigator program, the record key value can be checked to validate the data.

Audit Trail

The 21-CFR protocol requires that an audit trail be kept to

1. Maintain an event log to document events that could affect the data, such as when errors occurred.
2. Ensure that the original conditions under which a sample was taken could be reproduced.

The Navigator Software maintains the Event log through a Journal mechanism that is stored to the database. Each important event is time-stamped and saved. A user can review the Journal at any time in the LabSpeed Navigator software to compare timed events.

Although the Journal could be used to track changes to the method and calibration parameters on a field-by-field basis, the Navigator software instead saves the entire method and entire calibration with each sample. This is the ultimate audit trail in that the exact conditions under which each sample was run and how the results were calculated are stored with each sample.

21-CFR Administrator Setup

The Administrator's role - Window's Setup

The Administrator has special privileges in the Windows operating system. In particular, the Administrator is allowed to setup other user accounts and privileges.

The Administrator also plays an important role in the setup of the Navigator software for 21-CFR. For example, the Administrator will need to setup the Windows operating system such that certain instrument users have restricted roles (do not have administrative rights) in order to control access to secure sections of the Navigator software.

In order to setup the Navigator 21-CFR Window's environment, the administrator must

1. Setup Windows User accounts for Meter operators. Each Meter operator must be provided a Window's log-in user name and password. Normal Meter operators will not have Administrator rights.
2. Secure the Navigator database by adding a password. By default the Navigator database is not secure -- any user may use Microsoft Access to open, browse and even modify the contents of the database. 21-CFR requires that the database be secured by a password. For instructions, [click here](#).
3. Give all Navigator users Write permission to the database. For instructions, [click here](#).

The Administrator's role - Navigator Setup

The Administrator sets up 21-CFR environment in Navigator by running the [NavAdmin.exe](#) program.

Only a Windows Administrator may run the NavAdmin program; if a user who does not have Windows administrator privileges attempts to run NavAdmin, the program will not run.

Several 21-CFR related options may be set by the Administrator in the NavAdmin program. He may:

1. Turn ON /OFF the 21-CFR protocol

The Star Navigator software can run with or without the 21-CFR protocol, which requires an instrument operator to author (digitally sign) every sample that is run.

The Administrator may force the 21-CFR protocol operation within Star Navigator by turning on this option.

2. Turn ON/OFF Auto-store

In 21-CFR mode, Auto-store is required to be turned ON. If 21-CFR mode is turned OFF, Auto-store may be set to either state by the Administrator. Auto-store forces all data that is collected on the instrument to be stored to the database without user intervention.

3. Set the number of times a user can fail to enter a password

In order to circumvent an unauthorized access through multiple password guesses, the Administrator can set the maximum number of times a password entry can fail.

4. Specify database name and path, and password

The NavAdmin program is where the administrator sets up the location and name of the database and the database password. This information is visible to the Administrator in the NavAdmin program but is saved in encrypted form in an external configuration file.

5. Setup 21-CFR Users and Authoring Privileges

The Administrator will setup authoring privileges on a user-by-user basis and setup additional user information not available in the Windows security model, such as the user's full name.

For a complete description of these Administrator setup functions, see the description of the [NavAdmin.exe](#) program.

21-CFR Users

Navigator users are maintained automatically. When an operator first runs the Navigator software, the user is automatically added to an internally maintained user table in the database, if that user doesn't already exist.

Note: if a Window's user has been setup by the Administrator without [Write](#) access to the database, an error will occur when Navigator is launched. If this happens, the Administrator must update the user's Windows privileges. [Click here for instructions](#).

By default, each new Navigator user will not have 21-CFR authoring rights. Also, the new user's full name (required by 21-CFR) will be blank. If Navigator is setup for 21-CFR compliance, the Administrator will need to run the NavAdmin program to update the user's record to give that user 21-CFR privileges, if that user will be allowed to run the instrument and digitally sign samples.

The Administrator can also add new users manually. For a complete description of how to add new users and modify existing users, see the description of the [NavAdmin.exe](#) program.

21-CFR User Validation

Signing Electronic Records

User Verification and Digital Signature

Active users who are currently logged onto Windows and have 21-CFR authoring rights will be allowed to run the instrument, collect sample data and store data.

After clicking the MEASURE button, the Digital Signature Dialog is displayed requiring the user to verify his identity by entering his Windows password and clicking OK. He is required to do this before every instrument Measurement of an unknown sample.

Digital Signature

21-CFR User Verification

Username: SlideRule

Full Name: SRS Systems

Password: *****

Notes:

Reason: Author

Cancel OK

If the user cannot be verified (e.g. the user fails to enter his password correctly within the number of times set by the Administrator), the Digital Signature Dialog will exit and the sample measurement will be terminated.

On successful entry of the log-in password, the sample Measurement is allowed to continue and when data returns, it is automatically stored to the database along with a record of the digital signature before displaying the results on the screen.

How the Password is verified

A user is initially verified when he/she logs into the Windows XP operating system. When taking a measurement, the username of the user who is currently logged in is displayed in the 21-CFR signing dialog and it cannot be changed. When the user enters his/her password, it is verified via a Windows system call. If the entered password does not verify, Navigator rejects the password entry and the sample measurement is cancelled.

21-CFR Verification and History

The *Research* program (LabSpeed Navigator) provides a solution that fulfills all the post-analysis 21-CFR Part 11 requirements. In LabSpeed Navigator, you can

1. Browse the database for 21-CFR authored samples
2. View the signature history for each sample
3. Add additional signatures to a sample for *Approved*, *Reviewed* and *Verified* reasons
4. Validate the Data
5. View and Browse the Journal (21-CFR Audit log)

Click on the Research... toolbar button to run LabSpeed Navigator.



LabSpeed Navigator is a standalone application and contains its own complete Help document. For a complete description of the LabSpeed 21-CFR post-analysis solution, refer to the Help Contents on LabSpeed's main menu bar and select the Advanced Book .

About ThermoFisher Scientific

ThermoFisher Scientific is the world leader in analytical instruments. Our instrument solutions enable our customers to make the world a healthier, cleaner and safer place. ThermoFisher's Life and Laboratory Sciences segment provides analytical instruments, scientific equipment, services and software solutions for life science, drug discovery, clinical, environmental and industrial laboratories.

ThermoFisher designed the Orion Star Series to offer rapid, accurate measurement of pH, ISE, dissolved oxygen and conductivity in the laboratory or the field. Intended for quality assurance in various industries, the Star Series is the first U.S. multi-parameter meter that can store up to 10 programmable methods with password protection with the option of 21 CFR Part 11 compliance.

How To Contact Us

Environmental Instruments

Water Analysis

166 Cummings Center
Beverly, MA 01915
Tel: 1-800-225-1480
Fax: 978-232-6015



For a complete list of products and services, visit our website at www.thermo.com/water

Administrator Instructions

Administrator Instructions

Database Access Permission

Each user must have Write access to the Navigator database. If a user's permissions do not give him/her Write access, the user's file rights must be upgraded and an Administrator must be logged on in order to do this:

1. Using Windows Explorer, locate the Navigator database. It's exact name and location may be found by running the [NavAdmin.exe](#) program and clicking on the Database tab.
2. Right click on the database file in the Window's explorer window.
3. Select Properties, Select Security Tab
4. Enable Write permission or Full control for the User, the Workgroup or the Domain the user belongs to.

Note: When the Navigator database resides on the Company Network (LAN) you may need the Network Administrator to change the file permissions.

Database Security

By default there is no password and therefore the database is not secure. The administrator will have to manually assign a password to the Navigator Access database and then specify the database password in the [NavAdmin.exe](#) program.

Note: The exact location and name of the database may be obtained by running the NavAdmin.exe program and choosing the Database Tab.

Instructions for protecting the Navigator database by adding a database password (Required when Running in 21 CFR Mode)

1. Exit all programs that might have the database open, including Navigator itself and NavAdmin.exe.
2. Make a backup copy of the Navigator database, and store it in a secure place. If the password is lost or forgotten, it can't be recovered, and the database won't be able to be opened.

3. Run Microsoft Access®. Choose File Open and browse to find the Navigator database. Single-click on the database file to select it in the list.
4. Click the arrow to the right of the Open button, and then click Open Exclusive.
5. On the Tools menu, point to Security, and then click Set Database Password.
6. In the Password box, type your password. Passwords are case-sensitive.
7. In the Verify box, confirm your password by typing the password again, and then click OK.

Index

2

21-CFR..... 69, 77, 78, 80, 81
 21-CFR Administrator Setup.....78
 21-CFR Audit 69, 81
 21-CFR Overview77
 21-CFR Part 1181
 21-CFR User Validation80
 21-CFR Users80
 21-CFR Verification81
 Encryption.....77

A

About ThermoFisher Scientific.....82
Access Database 6, 17
Acquire..... 10, 18
 Types18
Activate/de-activate Users.....69
Active Method .3, 6, 10, 18, 31, 37, 39
Admin Options.....69
Administrator 69, 78, 80, 83
Administrator Instructions83
Administrator Setup69
Air/sat/water.....31
Air-Saturated-Water60

Approved81
Audit Trail77
Authoring Privileges.....78
Auto save18
Auto-Buffer Recognition42
Auto-configure..... 10, 18
Auto-detect..... 40, 42, 52, 55, 60
Auto-increment..... 9, 10, 18
Auto-Read.....10
Auto-recognized..... 31, 42, 52, 55, 60
Auto-Save.....10, 17, 18
Auto-Standard Recognition ..52, 55, 60
Auto-storage69
Auto-Store 69, 78

B

Back 6, 40
Barometer Pressure31
Barometer Type31
Batch-52.....18
Batch-53.....18
Benchtop31
Browse 69, 81
Browse 21-CFR.....69

Buffer Set 31, 42

C

Calibrating 6, 40, 42, 47, 52, 55, 60

Conductivity 55

DO 60

ISE 47

ORP 52

pH 42

Calibration 6, 39, 40, 65

Calibration Overdue Warnings 31

Calibration Start... 42, 47, 52, 55, 60

Calibration Type..... 31, 40, 60

Viewing..... 39

Cell Constant..... 31

Cell Type 31

CFR Mode 83

CFR Part 11..... 82

CFR21Rights 69

Clicking

START button 18

Collect..... 9

Collect Data button 9

Collect Stored Data button 9

Collecting..... 9

Sample Data..... 9

Stored Data..... 9

Colour 18

Comment..... 10, 18

Company Network..... 83

Conc Range..... 31

Cond 5, 10, 18, 39

Conductivity 3, 10, 16, 18, 31, 55

Calibrating 55

Conductivity Auto-calibration 31

Conductivity Calibration 55

Continuous..... 18

Starting 18

Taking 18

Copy 18

Copy/paste 10, 18

Ctrl-C..... 18

Ctrl-V 18

Current Method..... 31

D

Data Capture Interval 18

Setting 18

Data Counter..... 18

Data Research 6

Data Validation 77

Database 18, 69, 83

Database Access Permission	83	Electrochemistry	1
Database Connection	69	Electrode	10, 18
Database Security	83	Electronic Records	80
Database Security Password	69	Signing	80
Database Tab	83	Enable 21-CFR Part 11 Compliance ..	69
Date Created	69	Enable Active Method Caching	69
Decimal Resolution	60	Enable Write	83
Digital Signature	80	Enforce Auto-Store	69
Digital Signature Dialog	80	Enter Sample ID Information	10, 18
DIN	31, 42	Euro	31, 42
Disconnecting	5	Exiting	5, 31, 69
Meter	5	Method Editor	31
Display	18, 65	NavAdmin	69
Start	18	Navigator	5
Dissolved Oxygen .	3, 6, 10, 16, 18, 31	Exporting	37, 69
Dissolved Oxygen Calibration	60	Exporting Methods	31, 37
Dissolved Oxygen Units	16	F	
DO	5, 6, 10, 16, 18, 31, 39, 60	Folder	9, 10, 18
Calibrating	60	Full Name	69
DO Calibration	60	G	
DO Calibration Type	60	Getting Started	6
E		Graph Toolbar	18
Edit Method	3, 37, 69	H	
Edit Method toolbar button	6, 31	Hashed	77
Electrochemical	5	Help	6, 18, 69, 81

Help Contents..... 69, 81

History81

I

Import Method37

Importing37

 Method37

Incorrect Password Attempts Before
Failure69

Ion Concentration18

Ion Selective Electrode10

ISE 3, 5, 10, 18, 31, 39, 47, 82

 Calibrating47

ISE Calibration47

ISE Electrode47

ISE measurement31

J

Journaling69, 77, 81

 Browse81

 Display69

 review77

L

LabSpeed Navigator 6, 69, 77, 81

LAN83

Lin Temp Comp31

LOW.....31

M

Main Screen10, 16, 18

Manual31

Manual Calibration ..42, 47, 52, 55, 60

Manual Range 1-731

Manual Temperature.....31

Manual, Auto31

Measure 9, 10, 18, 65

Measure button..... 10, 80

 clicking80

Measurement type18

Measurement Types10

Measurements 6, 10, 18, 80

 Taking 6, 10

Meter 3, 5, 6, 9, 10, 16, 17, 18, 31,
37, 39, 40, 42, 47, 52, 55, 60, 65,
69, 78

 Active Method 6, 31

 determining..... 6, 40

 disconnecting..... 5

 Method 6, 40

Meter Connection 5

Meter Method37

Meter Options69

Meter Overview 5

Meter set

StoredData-1	9	New User	69
Meter Types	5	New User dialog	69
Meter User's Manual	5	NIST	31, 42
Method.. 6, 18, 31, 37, 39, 40, 47, 60, 69		NLF	31
Exporting	37	NLin	31
Importing.....	37	Now	9
Meter	6, 40	O	
Saving	31	Option allows.....	9
Method Development.....	6, 31	user	9
Method Editor	31, 37	Option provides	18
Save Method	37	Options	9, 10, 17, 18, 31
Microsoft Access	78	Orion.....	31
Minimise	18	Orion Star	1
Zoom In Click	18	Orion Star Series	5, 82
MV.....	18	ORP	3, 5, 6, 10, 18, 39, 52
N		Calibrating	52
NavAdmin	69, 78, 80	ORP Calibration.....	52
NavAdmin.exe	69, 83	Oxidation-reduction	5, 18
running.....	83	Oxidation-Reduction Potential	6, 10, 18
Navigator Main Screen.....	3	P	
Navigator Setup.....	78	Password	80, 83
Navigator Software	5, 77	PH	3, 5, 10, 16, 18, 31, 39, 42, 82
Navigator toolbar	6, 31	Calibrating	42
Network Administrator	83	PH Calibration.....	42
		PH Electrode.....	42

PH Meter	5
PH Resolution	31
PH,Conductivity	18
Pharmaceutical	1
Planar	31
ppb.....	31, 47
Press.....	9
Collect Stored Data button.....	9
Press.....	65
Press.....	65
Pressure Compensation.....	60
Protecting	83
Navigator.....	83
R	
Ref Temp.....	31
Reference Temperature.....	31
Reporting.....	6, 69
Represent	18
Main.....	18
RES	5, 10, 18
Research	6, 69, 81
Resolution Concentration	31
Resolution Sat	31
Re-stablized	42, 47, 55
Result window	16

Results	6, 16, 18
Saving	6
Viewing.....	16
Rijndael	77
RS232 Serial	69
RS-232 Serial	5
Run Microsoft Access®	83
S	
SAL.....	5, 10, 18
Salinity	18, 31
Salinity Compensation	60
Salinity Factor	31
Salinity Type	31
Sample Data	9
Sample ID.....	17
Sample Name	10, 18
Sample Results.....	17
Saving	17
Sample-1.....	10
Save	6, 17, 18, 31, 37, 69
Database	69
Method	31
Results	6
Sample Results	17
SAVE button.....	10, 16, 17

Save Changes	69	Continuous	18
Save Measurements	10, 17	display.....	18
Warn	10, 17	START button	18
Save Results	10	Stirrer Speed.....	31
Saving Continuous measurement	18	Stop.....	10, 18
Seconds	18	Stop button.....	9, 10
Secure	78	clicking	10
Navigator.....	78	Stopping Continuous Measurement..	18
Security.....	83	Stored Data	9
Self-configures	3, 5	StoredData-1	9
Setting	18	meter set	9
Data Capture Interval	18	T	
Setup 21-CFR Users	78	Take Continuous Measurement	18
Setup Windows User.....	78	Taking	18
Show Cursor Shows.....	18	Continuous.....	18
Significant Digits.....	31	TDS	5, 10, 18, 31
Signing.....	80	TDS Factor.....	31
Electronic Records	80	Temp Calibration.....	40
Signing Electronic Records.....	77	Temp Coefficient.....	31
Simulation Mode	69	Temp Comp	31
Standards	31, 40	Temperature Calibration.....	65
Star Navigator	9, 69, 78	Test Connection	69
Star Series.....	82	Thermo	69, 82
Start	18, 65	ThermoFisher Scientific	82
		Time	5, 9, 18

Meter	5
Toolbar button.....	6, 40, 69, 81
Tools menu	83
Total Dissolved Solids	10, 18
Total Dissolved Solids Conductivity ..	31
Turn ON/OFF Auto-store	78
Types.....	18
Acquire.....	18

U

USA	31, 42
User.....	9, 69, 83
option allows	9
User Identification.....	77
User Name.....	69
User Verification	80
User wants.....	9
User's Role.....	77
determining.....	77
Users Tab	69

V

Validate Data	69
Validating	77, 81
Data.....	81
user's	77
Verified	81, 83

View Calibration.....	3, 39
View Results.....	10
Viewing	16, 39
Calibrations	39
Results	16
Viewing/Editing.....	31
Different Method	31

W

Warn.....	10, 17
Save Measurements	10, 17
Water/sat/air.....	31
Water-Saturated Air	60
Welcome.....	1
Windows Administrator	78
Windows Security.....	77
Windows XP	77, 80
Windows XP Security	77
Winkler.....	31, 60

Z

Zero.....	60
running.....	60
Zoom In Click.....	18
minimise.....	18
Zoom Out Click.....	18

